

# SEQUENCE LISTING

<110> Levy, Stuart, et. al.

<120> NIMR COMPOSITIONS AND THEIR METHODS OF USE

<130> PKZ-043

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<150> 60/188,362

<151> 2000-03-10

<160> 98

<170> PatentIn Ver. 2.0

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|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |      |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------|
| gaa<br>Glu | ggt<br>Gly | aaa<br>Lys | aac<br>Asn | atc<br>Ile | gcg<br>Ala | cac<br>His | cag<br>Gln | gtt<br>Val | aag<br>Lys | aaa<br>Lys | atg<br>Met | aac<br>Asn | atg<br>Met | gac<br>Asp | ggt<br>Gly | 6647 |
|            |            |            | 405        |            |            |            | 410        |            |            |            | 415        |            |            |            |            |      |
| gtg<br>Val | cgt<br>Arg | cat<br>His | atc<br>Ile | cgc<br>Arg | gac<br>Asp | cgt<br>Arg | ttc<br>Phe | aat<br>Asn | gtg<br>Val | ccg<br>Pro | gtg<br>Val | tct<br>Ser | gat<br>Asp | gca<br>Ala | gat<br>Asp | 6695 |
|            |            |            | 420        |            |            |            | 425        |            |            |            | 430        |            |            |            |            |      |
| atc<br>Ile | gaa<br>Glu | aaa<br>Lys | ctg<br>Leu | ccg<br>Pro | tac<br>Tyr | atc<br>Ile | acc<br>Thr | ttc<br>Phe | ccg<br>Pro | gaa<br>Glu | ggt<br>Gly | tct<br>Ser | gaa<br>Glu | gag<br>Glu | cat<br>His | 6743 |
|            |            |            | 435        |            |            |            | 440        |            |            |            | 445        |            |            |            |            |      |
| acc<br>Thr | tat<br>Tyr | ctg<br>Leu | cac<br>His | gct<br>Ala | cag<br>Gln | cgt<br>Arg | cag<br>Gln | aaa<br>Lys | ctg<br>Leu | cac<br>His | ggt<br>Gly | tat<br>Tyr | ctg<br>Leu | cca<br>Pro | agc<br>Ser | 6791 |
|            |            |            | 450        |            |            |            | 455        |            |            |            | 460        |            |            |            |            |      |
| cgt<br>Arg | cag<br>Gln | ccg<br>Pro | aac<br>Asn | ttc<br>Phe | acc<br>Thr | gag<br>Glu | aag<br>Lys | ctt<br>Leu | gag<br>Glu | ctg<br>Leu | ccg<br>Pro | agc<br>Ser | ctg<br>Leu | caa<br>Gln | gac<br>Asp | 6839 |
|            |            |            | 470        |            |            |            | 475        |            |            |            | 480        |            |            |            |            |      |
| ttc<br>Phe | ggc<br>Gly | gcg<br>Ala | ctg<br>Leu | ttg<br>Leu | gaa<br>Glu | gag<br>Glu | cag<br>Gln | agc<br>Ser | aaa<br>Lys | gag<br>Glu | atc<br>Ile | tct<br>Ser | acc<br>Thr | act<br>Thr | atc<br>Ile | 6887 |
|            |            |            | 485        |            |            |            | 490        |            |            |            | 495        |            |            |            |            |      |
| gct<br>Ala | ttc<br>Phe | gtt<br>Val | cgt<br>Arg | gct<br>Ala | ctg<br>Leu | aac<br>Asn | gtg<br>Val | atg<br>Met | ctg<br>Leu | aag<br>Lys | aac<br>Asn | aag<br>Lys | tcg<br>Ser | atc<br>Ile | aaa<br>Lys | 6935 |
|            |            |            | 500        |            |            |            | 505        |            |            |            | 510        |            |            |            |            |      |
| gat<br>Asp | cgt<br>Arg | ctg<br>Leu | gta<br>Val | ccg<br>Pro | atc<br>Ile | atc<br>Ile | gcc<br>Ala | gac<br>Asp | gaa<br>Glu | gcg<br>Ala | cgt<br>Arg | act<br>Thr | ttc<br>Phe | ggt<br>Gly | atg<br>Met | 6983 |
|            |            |            | 515        |            |            |            | 520        |            |            |            | 525        |            |            |            |            |      |
| gaa<br>Glu | ggt<br>Gly | ctg<br>Leu | ttc<br>Phe | cgt<br>Arg | cag<br>Gln | att<br>Ile | ggt<br>Gly | att<br>Ile | tac<br>Tyr | agc<br>Ser | ccg<br>Pro | aac<br>Asn | ggt<br>Gly | cag<br>Gln | cag<br>Gln | 7031 |
|            |            |            | 530        |            |            |            | 535        |            |            |            | 540        |            |            |            |            |      |
| tac<br>Tyr | acc<br>Thr | ccg<br>Pro | cag<br>Gln | gac<br>Asp | cgc<br>Arg | gag<br>Glu | cag<br>Gln | gtt<br>Val | gct<br>Ala | tac<br>Tyr | tat<br>Tyr | aaa<br>Lys | gaa<br>Glu | gac<br>Asp | gag<br>Glu | 7079 |
|            |            |            | 550        |            |            |            | 555        |            |            |            | 560        |            |            |            |            |      |
| aaa<br>Lys | ggt<br>Gly | cag<br>Gln | att<br>Ile | ctg<br>Leu | cag<br>Gln | gaa<br>Glu | ggg<br>Gly | atc<br>Ile | aac<br>Asn | gag<br>Glu | ctg<br>Leu | ggc<br>Gly | gca<br>Ala | ggt<br>Gly | tgt<br>Cys | 7127 |
|            |            |            | 565        |            |            |            | 570        |            |            |            | 575        |            |            |            |            |      |
| tcc<br>Ser | tgg<br>Trp | ctg<br>Leu | gca<br>Ala | gcg<br>Ala | gcg<br>Ala | acc<br>Thr | tct<br>Ser | tac<br>Tyr | agc<br>Ser | acc<br>Thr | aac<br>Asn | aat<br>Asn | ctg<br>Leu | ccg<br>Pro | atg<br>Met | 7175 |
|            |            |            | 580        |            |            |            | 585        |            |            |            | 590        |            |            |            |            |      |
| atc<br>Ile | ccg<br>Pro | ttc<br>Phe | tac<br>Tyr | atc<br>Ile | tat<br>Tyr | tac<br>Tyr | tcg<br>Ser | atg<br>Met | ttc<br>Phe | ggc<br>Gly | ttc<br>Phe | cag<br>Gln | cgt<br>Arg | att<br>Ile | ggc<br>Gly | 7223 |
|            |            |            | 595        |            |            |            | 600        |            |            |            | 605        |            |            |            |            |      |
| gat<br>Asp | ctg<br>Leu | tgc<br>Cys | tgg<br>Trp | gcg<br>Ala | gct<br>Ala | ggc<br>Gly | gac<br>Asp | cag<br>Gln | caa<br>Gln | gcg<br>Ala | cgt<br>Arg | ggc<br>Gly | ttc<br>Phe | ctg<br>Leu | atc<br>Ile | 7271 |
|            |            |            | 610        |            |            |            | 615        |            |            |            | 620        |            |            |            |            |      |

|                   |            |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |            |                   |      |
|-------------------|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|-------------------|------|
| ggc<br>Gly        | ggt<br>Gly | act<br>Thr        | tcc<br>Ser        | ggt<br>Gly<br>630 | cgt<br>Arg        | acc<br>Thr        | acc<br>Thr        | ctg<br>Leu<br>635 | aac<br>Asn<br>635 | ggc<br>Gly        | gaa<br>Glu        | ggt<br>Gly        | ctg<br>Leu        | cag<br>Gln | cac<br>His        | 7319 |
| gaa<br>Glu        | gat<br>Asp | ggt<br>Gly        | cac<br>His<br>645 | agc<br>Ser        | cac<br>His        | att<br>Ile        | cag<br>Gln        | tcg<br>Ser<br>650 | ctg<br>Leu        | act<br>Thr        | atc<br>Ile        | ccg<br>Pro        | aac<br>Asn        | tgt<br>Cys | atc<br>Ile        | 7367 |
| tct<br>Ser        | tac<br>Tyr | gac<br>Asp<br>660 | ccg<br>Pro        | gct<br>Ala        | tac<br>Tyr        | gct<br>Ala        | tac<br>Tyr        | gaa<br>Glu<br>665 | gtt<br>Val        | gct<br>Ala        | gtc<br>Val        | atc<br>Ile<br>670 | atg<br>Met        | cat<br>His | gac<br>Asp        | 7415 |
| ggt<br>Gly<br>675 | ctg<br>Leu | gag<br>Glu        | cgt<br>Arg        | atg<br>Met        | tac<br>Tyr        | ggt<br>Gly<br>680 | gaa<br>Glu        | aaa<br>Lys        | caa<br>Gln        | gag<br>Glu        | aac<br>Asn<br>685 | gtt<br>Val        | tac<br>Tyr        | tac<br>Tyr | tac<br>Tyr        | 7463 |
| atc<br>Ile<br>690 | act<br>Thr | acg<br>Thr        | ctg<br>Leu        | aac<br>Asn<br>695 | gaa<br>Glu<br>695 | aac<br>Asn        | tac<br>Tyr        | cac<br>His        | atg<br>Met<br>700 | ccg<br>Pro        | gca<br>Ala        | atg<br>Met        | ccg<br>Pro        | gaa<br>Glu | ggt<br>Gly<br>705 | 7511 |
| gct<br>Ala        | gag<br>Glu | gaa<br>Glu        | ggt<br>Gly<br>710 | atc<br>Ile        | cgt<br>Arg        | aaa<br>Lys        | ggt<br>Gly        | atc<br>Ile<br>715 | tac<br>Tyr        | aaa<br>Lys        | ctc<br>Leu        | gaa<br>Glu        | act<br>Thr        | att<br>Ile | gaa<br>Glu<br>720 | 7559 |
| ggt<br>Gly        | agc<br>Ser | aaa<br>Lys<br>725 | ggt<br>Gly        | aaa<br>Lys        | gtt<br>Val        | cag<br>Gln        | ctg<br>Leu        | ctc<br>Leu<br>730 | ggc<br>Gly        | tcc<br>Ser        | ggt<br>Gly        | tct<br>Ser        | atc<br>Ile<br>735 | ctg<br>Leu | cgt<br>Arg        | 7607 |
| cac<br>His<br>740 | gtc<br>Val | cgt<br>Arg        | gaa<br>Glu        | gca<br>Ala        | gct<br>Ala        | gag<br>Glu        | atc<br>Ile<br>745 | ctg<br>Leu        | gcg<br>Ala        | aaa<br>Lys        | gat<br>Asp        | tac<br>Tyr        | ggc<br>Gly        | gta<br>Val | ggt<br>Gly        | 7655 |
| tct<br>Ser<br>755 | gac<br>Asp | gtt<br>Val        | tat<br>Tyr        | agc<br>Ser        | gtg<br>Val        | acc<br>Thr<br>760 | tcc<br>Ser        | ttc<br>Phe        | acc<br>Thr        | gag<br>Glu        | ctg<br>Leu<br>765 | gcg<br>Ala        | cgt<br>Arg        | gat<br>Asp | ggt<br>Gly        | 7703 |
| cag<br>Gln<br>770 | gat<br>Asp | tgt<br>Cys        | gaa<br>Glu        | cgc<br>Arg        | tgg<br>Trp<br>775 | aac<br>Asn        | atg<br>Met        | ctg<br>Leu        | cac<br>His        | ccg<br>Pro<br>780 | ctg<br>Leu        | gaa<br>Glu        | act<br>Thr        | ccg<br>Pro | cgc<br>Arg<br>785 | 7751 |
| gtt<br>Val        | ccg<br>Pro | tat<br>Tyr        | atc<br>Ile        | gct<br>Ala        | cag<br>Gln        | gtg<br>Val        | atg<br>Met        | aac<br>Asn        | gac<br>Asp<br>795 | gct<br>Ala        | ccg<br>Pro        | gca<br>Ala        | gtg<br>Val        | gca<br>Ala | tct<br>Ser<br>800 | 7799 |
| acc<br>Thr        | gac<br>Asp | tat<br>Tyr        | atg<br>Met<br>805 | aaa<br>Lys        | ctg<br>Leu        | ttc<br>Phe        | gct<br>Ala        | gag<br>Glu<br>810 | cag<br>Gln        | gtc<br>Val        | cgt<br>Arg        | act<br>Thr        | tac<br>Tyr<br>815 | gta<br>Val | ccg<br>Pro        | 7847 |
| gct<br>Ala        | gac<br>Asp | gac<br>Asp<br>820 | tac<br>Tyr        | cgc<br>Arg        | gta<br>Val        | ctg<br>Leu        | ggt<br>Gly<br>825 | act<br>Thr        | gat<br>Asp        | ggc<br>Gly        | ttc<br>Phe        | ggt<br>Gly<br>830 | cgt<br>Arg        | tcc<br>Ser | gac<br>Asp        | 7895 |
| agc<br>Ser<br>835 | cgt<br>Arg | gag<br>Glu        | aac<br>Asn        | ctg<br>Leu        | cgt<br>Arg        | cac<br>His<br>840 | cac<br>His        | ttc<br>Phe        | gaa<br>Glu        | gtt<br>Val        | gat<br>Asp<br>845 | gct<br>Ala        | tct<br>Ser        | tat<br>Tyr | gtc<br>Val        | 7943 |
| gtg<br>Gly        | gtt<br>Gly | gcg<br>Gly        | gcg<br>Gly        | ctg<br>Gly        | ggc<br>Gly        | gaa<br>Gly        | ctg<br>Gly        | gct<br>Gly        | aaa<br>Gly        | cgt<br>Gly        | ggc<br>Gly        | gaa<br>Gly        | atc<br>Gly        | gat<br>Gly | aag<br>Gly        | 7991 |

|     |      |      |      |     |     |      |     |          |      |      |      |      |      |      |     |      |
|-----|------|------|------|-----|-----|------|-----|----------|------|------|------|------|------|------|-----|------|
| Val | Val  | Ala  | Ala  | Leu | Gly | Glu  | Leu | Ala      | Lys  | Arg  | Gly  | Glu  | Ile  | Asp  | Lys |      |
| 850 |      |      |      |     | 855 |      |     |          |      | 860  |      |      |      |      | 865 |      |
| aaa | gtg  | gtt  | gct  | gac | gca | atc  | gcc | aaa      | ttc  | aac  | atc  | gat  | gca  | gat  | aaa | 8039 |
| Lys | Val  | Val  | Ala  | Asp | Ala | Ile  | Ala | Lys      | Phe  | Asn  | Ile  | Asp  | Ala  | Asp  | Lys |      |
|     |      |      |      | 870 |     |      |     |          | 875  |      |      |      |      | 880  |     |      |
| gtt | aac  | ccg  | cgt  | ctg | gcg | taa  | gag | gtaaaaag | aata | atg  | gct  | atc  | gaa  | atc  |     | 8089 |
| Val | Asn  | Pro  | Arg  | Leu | Ala |      |     |          |      | Met  | Ala  | Ile  | Glu  | Ile  |     |      |
|     |      |      | 885  |     |     |      |     |          |      |      | 890  |      |      |      |     |      |
| aaa | gta  | ccg  | gac  | atc | ggg | gct  | gat | gaa      | gtt  | gaa  | atc  | acc  | gag  | atc  | ctg | 8137 |
| Lys | Val  | Pro  | Asp  | Ile | Gly | Ala  | Asp | Glu      | Val  | Glu  | Ile  | Thr  | Glu  | Ile  | Leu |      |
|     | 895  |      |      |     |     | 900  |     |          |      |      | 905  |      |      |      |     |      |
| gtc | aaa  | gtg  | ggc  | gac | aaa | gtt  | gaa | gcc      | gaa  | cag  | tcg  | ctg  | atc  | acc  | gta | 8185 |
| Val | Lys  | Val  | Gly  | Asp | Lys | Val  | Glu | Ala      | Glu  | Gln  | Ser  | Leu  | Ile  | Thr  | Val |      |
| 910 |      |      |      |     | 915 |      |     |          |      | 920  |      |      |      |      | 925 |      |
| gaa | ggc  | gac  | aaa  | gcc | tct | atg  | gaa | gtt      | ccg  | tct  | ccg  | cag  | gcg  | ggt  | atc | 8233 |
| Glu | Gly  | Asp  | Lys  | Ala | Ser | Met  | Glu | Val      | Pro  | Ser  | Pro  | Gln  | Ala  | Gly  | Ile |      |
|     |      |      |      | 930 |     |      |     |          | 935  |      |      |      |      | 940  |     |      |
| gtt | aaa  | gag  | atc  | aaa | gtc | tct  | gtt | ggc      | gat  | aaa  | acc  | cag  | acc  | ggc  | gca | 8281 |
| Val | Lys  | Glu  | Ile  | Lys | Val | Ser  | Val | Gly      | Asp  | Lys  | Thr  | Gln  | Thr  | Gly  | Ala |      |
|     |      |      | 945  |     |     |      |     | 950      |      |      |      |      | 955  |      |     |      |
| ctg | att  | atg  | att  | ttc | gat | tcc  | gcc | gac      | ggt  | gca  | gca  | gac  | gct  | gca  | cct | 8329 |
| Leu | Ile  | Met  | Ile  | Phe | Asp | Ser  | Ala | Asp      | Gly  | Ala  | Ala  | Asp  | Ala  | Ala  | Pro |      |
|     |      | 960  |      |     |     |      | 965 |          |      |      |      | 970  |      |      |     |      |
| gct | cag  | gca  | gaa  | gag | aag | aaa  | gaa | gca      | gct  | ccg  | gca  | gca  | gca  | cca  | gcg | 8377 |
| Ala | Gln  | Ala  | Glu  | Glu | Lys | Lys  | Glu | Ala      | Ala  | Pro  | Ala  | Ala  | Ala  | Pro  | Ala |      |
|     | 975  |      |      |     |     | 980  |     |          |      | 985  |      |      |      |      |     |      |
| gct | gcg  | gcg  | gca  | aaa | gac | gtt  | aac | gtt      | ccg  | gat  | atc  | ggc  | agc  | gac  | gaa | 8425 |
| Ala | Ala  | Ala  | Ala  | Lys | Asp | Val  | Asn | Val      | Pro  | Asp  | Ile  | Gly  | Ser  | Asp  | Glu |      |
| 990 |      |      |      |     | 995 |      |     |          | 1000 |      |      |      |      | 1005 |     |      |
| gtt | gaa  | gtg  | acc  | gaa | atc | ctg  | gtg | aaa      | gtt  | ggc  | gat  | aaa  | gtt  | gaa  | gct | 8473 |
| Val | Glu  | Val  | Thr  | Glu | Ile | Leu  | Val | Lys      | Val  | Gly  | Asp  | Lys  | Val  | Glu  | Ala |      |
|     |      |      | 1010 |     |     |      |     | 1015     |      |      |      |      | 1020 |      |     |      |
| gaa | cag  | tcg  | ctg  | atc | acc | gta  | gaa | ggc      | gac  | aag  | gct  | tct  | atg  | gaa  | gtt | 8521 |
| Glu | Gln  | Ser  | Leu  | Ile | Thr | Val  | Glu | Gly      | Asp  | Lys  | Ala  | Ser  | Met  | Glu  | Val |      |
|     |      |      | 1025 |     |     |      |     | 1030     |      |      |      | 1035 |      |      |     |      |
| ccg | gct  | ccg  | ttt  | gct | ggc | acc  | gtg | aaa      | gag  | atc  | aaa  | gtg  | aac  | gtg  | ggt | 8569 |
| Pro | Ala  | Pro  | Phe  | Ala | Gly | Thr  | Val | Lys      | Glu  | Ile  | Lys  | Val  | Asn  | Val  | Gly |      |
|     |      | 1040 |      |     |     | 1045 |     |          |      |      | 1050 |      |      |      |     |      |
| gac | aaa  | gtg  | tct  | acc | ggc | tcg  | ctg | att      | atg  | gtc  | ttc  | gaa  | gtc  | gcg  | ggt | 8617 |
| Asp | Lys  | Val  | Ser  | Thr | Gly | Ser  | Leu | Ile      | Met  | Val  | Phe  | Glu  | Val  | Ala  | Gly |      |
|     | 1055 |      |      |     |     | 1060 |     |          |      | 1065 |      |      |      |      |     |      |
| gaa | gca  | ggc  | gcg  | gca | gct | ccg  | gcc | gct      | aaa  | cag  | gaa  | gca  | gct  | ccg  | gca | 8665 |
| Glu | Ala  | Gly  | Ala  | Ala | Ala | Pro  | Ala | Ala      | Lys  | Gln  | Glu  | Ala  | Ala  | Pro  | Ala |      |



| 1070  | 1075 | 1080 | 1085 |      |
|---|------|------|------|------|
| gcg gcc cct gca cca gcg gct ggc gtg aaa gaa gtt aac gtt ccg gat |      |      |      | 8713 |
| Ala Ala Pro Ala Pro Ala Ala Gly Val Lys Glu Val Asn Val Pro Asp |      |      |      |      |
|   | 1090 | 1095 | 1100 |      |
| atc ggc ggt gac gaa gtt gaa gtg act gaa gtg atg gtg aaa gtg ggc |      |      |      | 8761 |
| Ile Gly Gly Asp Glu Val Glu Val Thr Glu Val Met Val Lys Val Gly |      |      |      |      |
|   | 1105 | 1110 | 1115 |      |
| gac aaa gtt gcc gct gaa cag tca ctg atc acc gta gaa ggc gac aaa |      |      |      | 8809 |
| Asp Lys Val Ala Ala Glu Gln Ser Leu Ile Thr Val Glu Gly Asp Lys |      |      |      |      |
|   | 1120 | 1125 | 1130 |      |
| gct tct atg gaa gtt ccg gcg ccg ttt gca ggc gtc gtg aag gaa ctg |      |      |      | 8857 |
| Ala Ser Met Glu Val Pro Ala Pro Phe Ala Gly Val Val Lys Glu Leu |      |      |      |      |
|   | 1135 | 1140 | 1145 |      |
| aaa gtc aac gtt ggc gat aaa gtg aaa act ggc tgc ctg att atg atc |      |      |      | 8905 |
| Lys Val Asn Val Gly Asp Lys Val Lys Thr Gly Ser Leu Ile Met Ile |      |      |      |      |
|   | 1150 | 1155 | 1160 | 1165 |
| ttc gaa gtt gaa ggc gca gcg cct gcg gca gct cct gcg aaa cag gaa |      |      |      | 8953 |
| Phe Glu Val Glu Gly Ala Ala Pro Ala Ala Ala Pro Ala Lys Gln Glu |      |      |      |      |
|   | 1170 | 1175 | 1180 |      |
| gcg gca gcg ccg gca ccg gca gca aaa gct gaa gcc ccg gca gca gca |      |      |      | 9001 |
| Ala Ala Ala Pro Ala Pro Ala Ala Lys Ala Glu Ala Pro Ala Ala Ala |      |      |      |      |
|   | 1185 | 1190 | 1195 |      |
| cca gct gcg aaa gcg gaa ggc aaa tct gaa ttt gct gaa aac gac gct |      |      |      | 9049 |
| Pro Ala Ala Lys Ala Glu Gly Lys Ser Glu Phe Ala Glu Asn Asp Ala |      |      |      |      |
|   | 1200 | 1205 | 1210 |      |
| tat gtt cac gcg act ccg ctg atc cgc cgt ctg gca cgc gag ttt ggt |      |      |      | 9097 |
| Tyr Val His Ala Thr Pro Leu Ile Arg Arg Leu Ala Arg Glu Phe Gly |      |      |      |      |
|   | 1215 | 1220 | 1225 |      |
| gtt aac ctt gcg aaa gtg aag ggc act ggc cgt aaa ggt cgt atc ctg |      |      |      | 9145 |
| Val Asn Leu Ala Lys Val Lys Gly Thr Gly Arg Lys Gly Arg Ile Leu |      |      |      |      |
|   | 1230 | 1235 | 1240 | 1245 |
| cgc gaa gac gtt cag gct tac gtg aaa gaa gct atc aaa cgt gca gaa |      |      |      | 9193 |
| Arg Glu Asp Val Gln Ala Tyr Val Lys Glu Ala Ile Lys Arg Ala Glu |      |      |      |      |
|   | 1250 | 1255 | 1260 |      |
| gca gct ccg gca gcg act ggc ggt ggt atc cct ggc atg ctg ccg tgg |      |      |      | 9241 |
| Ala Ala Pro Ala Ala Thr Gly Gly Gly Ile Pro Gly Met Leu Pro Trp |      |      |      |      |
|   | 1265 | 1270 | 1275 |      |
| ccg aag gtg gac ttc agc aag ttt ggt gaa atc gaa gaa gtg gaa ctg |      |      |      | 9289 |
| Pro Lys Val Asp Phe Ser Lys Phe Gly Glu Ile Glu Glu Val Glu Leu |      |      |      |      |
|   | 1280 | 1285 | 1290 |      |
| ggc cgc atc cag aaa atc tct ggt gcg aac ctg agc cgt aac tgg gta |      |      |      | 9337 |
| Gly Arg Ile Gln Lys Ile Ser Gly Ala Asn Leu Ser Arg Asn Trp Val |      |      |      |      |
|   | 1295 | 1300 | 1305 |      |

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Met Ile Pro His Val Thr His Phe Asp Lys Thr Asp Ile Thr Glu Leu  
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gaa gcg ttc cgt aaa cag cag aac gaa gaa gcg gcg aaa cgt aag ctg 9433  
Glu Ala Phe Arg Lys Gln Gln Asn Glu Glu Ala Ala Lys Arg Lys Leu  
1330 1335 1340

gat gtg aag atc acc ccg gtt gtc ttc atc atg aaa gcc gtt gct gca 9481  
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1345 1350 1355

gct ctt gag cag atg cct cgc ttc aat agt tcg ctg tcg gaa gac ggt 9529  
Ala Leu Glu Gln Met Pro Arg Phe Asn Ser Ser Leu Ser Glu Asp Gly  
1360 1365 1370

cag cgt ctg acc ctg aag aaa tac atc aac atc ggt gtg gcg gtg gat 9577  
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Thr Pro Asn Gly Leu Val Val Pro Val Phe Lys Asp Val Asn Lys Lys  
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Arg Asp Gly Lys Leu Thr Ala Gly Glu Met Gln Gly Gly Cys Phe Thr  
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Ile Ser Ser Ile Gly Gly Leu Gly Thr Thr His Phe Ala Pro Ile Val  
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Ser Leu Ser Phe Asp His Arg Val Ile Asp Gly Ala Asp Gly Ala Arg  
1490 1495 1500

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Phe Ile Thr Ile Ile Asn Asn Thr Leu Ser Asp Ile Arg Arg Leu Val  
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Val Asn Val Ala Ala Gly Thr Gly Ile Ser Asn Tyr Ile Asn Thr Ile  
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Pro Val Glu Glu Gln Pro Glu Tyr Pro Gly Asn Leu Glu Leu Glu Arg  
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Arg Ile Arg Ser Ala Ile Arg Trp Asn Ala Ile Met Thr Val Leu Arg  
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Ala Ser Lys Lys Asp Leu Glu Leu Gly Gly His Met Ala Ser Phe Gln  
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Ser Ser Ala Thr Ile Tyr Asp Val Cys Phe Asn His Phe Phe Arg Ala  
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Ser Tyr Pro His Pro Lys Leu Met Pro Glu Phe Trp Gln Phe Pro Thr  
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Val Ser Met Gly Leu Gly Pro Ile Gly Ala Ile Tyr Gln Ala Lys Phe  
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Leu Lys Tyr Leu Glu His Arg Gly Leu Lys Asp Thr Ser Lys Gln Thr  
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Val Tyr Ala Phe Leu Gly Asp Gly Glu Met Asp Glu Pro Glu Ser Lys  
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Val Ile Asn Cys Asn Leu Gln Arg Leu Asp Gly Pro Val Thr Gly Asn  
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Gly Asp Tyr Gln Thr Phe Lys Ser Lys Asp Gly Ala Tyr Val Arg Glu  
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Thr Val Ile Leu Ala His Thr Ile Lys Gly Tyr Gly Met Gly Asp Ala  
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Gly Val Arg His Ile Arg Asp Arg Phe Asn Val Pro Val Ser Asp Ala  
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Asp Ile Glu Lys Leu Pro Tyr Ile Thr Phe Pro Glu Gly Ser Glu Glu  
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His Thr Tyr Leu His Ala Gln Arg Gln Lys Leu His Gly Tyr Leu Pro  
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Ser Arg Gln Pro Asn Phe Thr Glu Lys Leu Glu Leu Pro Ser Leu Gln  
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Asp Phe Gly Ala Leu Leu Glu Glu Gln Ser Lys Glu Ile Ser Thr Thr  
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Ile Ala Phe Val Arg Ala Leu Asn Val Met Leu Lys Asn Lys Ser Ile  
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Lys Asp Arg Leu Val Pro Ile Ile Ala Asp Glu Ala Arg Thr Phe Gly  
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Met Glu Gly Leu Phe Arg Gln Ile Gly Ile Tyr Ser Pro Asn Gly Gln  
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Gln Tyr Thr Pro Gln Asp Arg Glu Gln Val Ala Tyr Tyr Lys Glu Asp  
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Glu Lys Gly Gln Ile Leu Gln Glu Gly Ile Asn Glu Leu Gly Ala Gly  
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Cys Ser Trp Leu Ala Ala Ala Thr Ser Tyr Ser Thr Asn Asn Leu Pro  
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Met Ile Pro Phe Tyr Ile Tyr Tyr Ser Met Phe Gly Phe Gln Arg Ile  
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Ile Gly Gly Thr Ser Gly Arg Thr Thr Leu Asn Gly Glu Gly Leu Gln  
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Asp Gly Leu Glu Arg Met Tyr Gly Glu Lys Gln Glu Asn Val Tyr Tyr  
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Tyr Ile Thr Thr Leu Asn Glu Asn Tyr His Met Pro Ala Met Pro Glu  
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770 775 780

Arg Val Pro Tyr Ile Ala Gln Val Met Asn Asp Ala Pro Ala Val Ala  
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Ser Thr Asp Tyr Met Lys Leu Phe Ala Glu Gln Val Arg Thr Tyr Val  
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Pro Ala Asp Asp Tyr Arg Val Leu Gly Thr Asp Gly Phe Gly Arg Ser  
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Val Val Val Ala Ala Leu Gly Glu Leu Ala Lys Arg Gly Glu Ile Asp  
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35 40 45

Ser Pro Gln Ala Gly Ile Val Lys Glu Ile Lys Val Ser Val Gly Asp  
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Lys Thr Gln Thr Gly Ala Leu Ile Met Ile Phe Asp Ser Ala Asp Gly  
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Ala Ala Asp Ala Ala Pro Ala Gln Ala Glu Glu Lys Lys Glu Ala Ala  
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Pro Ala Ala Ala Pro Ala Ala Ala Ala Lys Asp Val Asn Val Pro  
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Asp Ile Gly Ser Asp Glu Val Glu Val Thr Glu Ile Leu Val Lys Val  
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Gly Asp Lys Val Glu Ala Glu Gln Ser Leu Ile Thr Val Glu Gly Asp  
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Lys Ala Ser Met Glu Val Pro Ala Pro Phe Ala Gly Thr Val Lys Glu  
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Ile Lys Val Asn Val Gly Asp Lys Val Ser Thr Gly Ser Leu Ile Met  
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Val Phe Glu Val Ala Gly Glu Ala Gly Ala Ala Pro Ala Ala Lys  
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Gln Glu Ala Ala Pro Ala Ala Ala Pro Ala Pro Ala Ala Gly Val Lys  
195 200 205

Glu Val Asn Val Pro Asp Ile Gly Gly Asp Glu Val Glu Val Thr Glu  
210 215 220

Lys Asp Val Asn Lys Lys Gly Ile Ile Glu Leu Ser Arg Glu Leu Met  
515 520 525

Thr Ile Ser Lys Lys Ala Arg Asp Gly Lys Leu Thr Ala Gly Glu Met  
530 535 540

Gln Gly Gly Cys Phe Thr Ile Ser Ser Ile Gly Gly Leu Gly Thr Thr  
545 550 555

His Phe Ala Pro Ile Val Asn Ala Pro Glu Val Ala Ile Leu Gly Val  
560 565 570 575

Ser Lys Ser Ala Met Glu Pro Val Trp Asn Gly Lys Glu Phe Val Pro  
580 585 590

Arg Leu Met Leu Pro Ile Ser Leu Ser Phe Asp His Arg Val Ile Asp  
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 His Leu Gly Asn Gly Gly Ser Val Ser Ala Ile Arg Asn Gly Lys Cys  
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Asp Gly Asn Lys Gln Glu Ala Ala Leu Gly Ala Gly Ala Ala His Ser  
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Glu Ala Leu Asn Phe Ile Val Asn Thr Ile Leu Ala Gln Lys Pro Glu  
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Leu Ser Ala Gln Leu Thr Ala Ile Gly His Arg Ile Val His Gly Gly  
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Glu Lys Tyr Thr Ser Ser Val Val Ile Asp Glu Ser Val Ile Gln Gly  
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Ile Gly Ile Glu Glu Ala Leu Lys Ser Phe Pro Gln Leu Lys Asp Lys  
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Cys His Leu Gly Asn Gly Gly Ser Val Ser Ala Ile Arg Asn Gly Lys  
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Cys Val Asp Thr Ser Met Gly Leu Thr Pro Leu Glu Gly Leu Val Met  
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Gly Thr Arg Ser Gly Asp Ile Asp Pro Ala Ile Ile Phe His Leu His  
 245 250 255



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Val Tyr Cys His Arg Leu Ala Lys Tyr Ile Gly Ala Tyr Thr Ala Leu  
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Met Asp Gly Arg Leu Asp Ala Val Val Phe Thr Gly Gly Ile Gly Glu  
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Gly Phe Glu Val Asp His Glu Arg Asn Leu Ala Ala Arg Phe Gly Lys  
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| acggctatcg  | ttgttcagga  | ccccaccatg     | cagcggcgca  | cgatggcgac  | gttcgcgcgt  | 660  |
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| atttctgcct  | tttattcctt  | ttacacttgt     | ttttatgaag  | cccttcacag  | aattgtcctt  | 1080 |
| tcacgattcc  | gtctctctga  | tgattgatgt     | taattaacaa  | tgtattcacc  | gaaaacaaac  | 1140 |
| atataaatca  | caggagtcgc  | cc atg tca gta | ccc gtt caa | cat cct atg | tat         | 1192 |
|             |             | Met Ser Val    | Pro Val Gln | His Pro Met | Tyr         |      |
|             |             | 1              | 5           |             | 10          |      |
| atc gat gga | cag ttt gtt | acc tgg cgt    | gga gac gca | tgg att gat | gtg         | 1240 |
| Ile Asp Gly | Gln Phe Val | Thr Trp Arg    | Gly Asp Ala | Trp Ile Asp | Val         |      |
|             | 15          |                | 20          |             | 25          |      |
| gta aac cct | gct aca gag | gct gtc att    | tcc cgc ata | ccc gat ggt | cag         | 1288 |
| Val Asn Pro | Ala Thr Glu | Ala Val Ile    | Ser Arg Ile | Pro Asp Gly | Gln         |      |
|             | 30          |                | 35          |             | 40          |      |
| gcc gag gat | gcc cgt aag | gca atc gat    | gca gca gaa | cgt gca caa | cca         | 1336 |
| Ala Glu Asp | Ala Arg Lys | Ala Ile Asp    | Ala Ala Glu | Arg Ala Gln | Pro         |      |
|             | 45          |                | 50          |             | 55          |      |
| gaa tgg gaa | gcg ttg cct | gct att gaa    | cgc gcc agt | tgg ttg cgc | aaa         | 1384 |
| Glu Trp Glu | Ala Leu Pro | Ala Ile Glu    | Arg Ala Ser | Trp Leu Arg | Lys         |      |
|             | 60          |                | 65          |             | 70          |      |
| atc tcc gcc | ggg atc cgc | gaa cgc gcc    | agt gaa atc | agt gcg ctg | att         | 1432 |
| Ile Ser Ala | Gly Ile Arg | Glu Arg Ala    | Ser Glu Ile | Ser Ala Leu | Ile         |      |
|             | 75          |                | 80          |             | 85          |      |
| gtt gaa gaa | ggg ggc aag | atc cag cag    | ctg gct gaa | gtc gaa gtg | gct         | 1480 |
| Val Glu Glu | Gly Gly Lys | Ile Gln Gln    | Leu Ala Glu | Val Glu Val | Ala         |      |
|             | 95          |                | 100         |             | 105         |      |
| ttt act gcc | gac tat atc | gat tac atg    | gcg gag tgg | gca cgg cgt | tac         | 1528 |
| Phe Thr Ala | Asp Tyr Ile | Asp Tyr Met    | Ala Glu Trp | Ala Arg Arg | Tyr         |      |
|             | 110         |                | 115         |             | 120         |      |
| gag ggc gag | att att caa | agc gat cgt    | cca gga gaa | aat att ctt | ttg         | 1576 |
| Glu Gly Glu | Ile Ile Gln | Ser Asp Arg    | Pro Gly Glu | Asn Ile Leu | Leu         |      |
|             | 125         |                | 130         |             | 135         |      |
| ttt aaa cgt | gcg ctt ggt | gtg act acc    | ggc att ctg | ccg tgg aac | ttc         | 1624 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Phe | Lys | Arg | Ala | Leu | Gly | Val | Thr | Thr | Gly | Ile | Leu | Pro | Trp | Asn | Phe |      |
| 140 |     |     |     |     |     | 145 |     |     |     |     | 150 |     |     |     |     |      |
| ccg | ttc | ttc | ctc | att | gcc | cgc | aaa | atg | gct | ccc | gct | ctt | ttg | acc | ggt | 1672 |
| Pro | Phe | Phe | Leu | Ile | Ala | Arg | Lys | Met | Ala | Pro | Ala | Leu | Leu | Thr | Gly |      |
| 155 |     |     |     |     | 160 |     |     |     |     | 165 |     |     |     |     | 170 |      |
| aat | acc | atc | gtc | att | aaa | cct | agt | gaa | ttt | acg | cca | aac | aat | gcg | att | 1720 |
| Asn | Thr | Ile | Val | Ile | Lys | Pro | Ser | Glu | Phe | Thr | Pro | Asn | Asn | Ala | Ile |      |
|     |     |     |     | 175 |     |     |     |     | 180 |     |     |     |     | 185 |     |      |
| gca | ttc | gcc | aaa | atc | gtc | gat | gaa | ata | ggc | ctt | ccg | cgc | ggc | gtg | ttt | 1768 |
| Ala | Phe | Ala | Lys | Ile | Val | Asp | Glu | Ile | Gly | Leu | Pro | Arg | Gly | Val | Phe |      |
|     |     |     | 190 |     |     |     |     | 195 |     |     |     |     | 200 |     |     |      |
| aac | ctt | gta | ctg | ggg | cgt | ggt | gaa | acc | gtt | ggg | caa | gaa | ctg | gcg | ggt | 1816 |
| Asn | Leu | Val | Leu | Gly | Arg | Gly | Glu | Thr | Val | Gly | Gln | Glu | Leu | Ala | Gly |      |
|     |     | 205 |     |     |     |     | 210 |     |     |     |     | 215 |     |     |     |      |
| aac | cca | aag | gtc | gca | atg | gtc | agt | atg | aca | ggc | agc | gtc | tct | gca | ggt | 1864 |
| Asn | Pro | Lys | Val | Ala | Met | Val | Ser | Met | Thr | Gly | Ser | Val | Ser | Ala | Gly |      |
|     | 220 |     |     |     |     | 225 |     |     |     |     | 230 |     |     |     |     |      |
| gag | aag | atc | atg | gcg | act | gcg | gcg | aaa | aac | atc | acc | aaa | gtg | tgt | ctg | 1912 |
| Glu | Lys | Ile | Met | Ala | Thr | Ala | Ala | Lys | Asn | Ile | Thr | Lys | Val | Cys | Leu |      |
| 235 |     |     |     |     | 240 |     |     |     |     | 245 |     |     |     |     | 250 |      |
| gaa | ttg | ggg | ggt | aaa | gca | cca | gct | atc | gta | atg | gac | gat | gcc | gat | ctt | 1960 |
| Glu | Leu | Gly | Gly | Lys | Ala | Pro | Ala | Ile | Val | Met | Asp | Asp | Ala | Asp | Leu |      |
|     |     |     |     | 255 |     |     |     |     | 260 |     |     |     |     | 265 |     |      |
| gaa | ctg | gca | gtc | aaa | gcc | atc | gtt | gat | tca | cgc | gtc | att | aat | agt | ggg | 2008 |
| Glu | Leu | Ala | Val | Lys | Ala | Ile | Val | Asp | Ser | Arg | Val | Ile | Asn | Ser | Gly |      |
|     |     |     | 270 |     |     |     |     | 275 |     |     |     |     | 280 |     |     |      |
| caa | gtg | tgt | aac | tgt | gca | gaa | cgt | gtt | tat | gta | cag | aaa | ggc | att | tat | 2056 |
| Gln | Val | Cys | Asn | Cys | Ala | Glu | Arg | Val | Tyr | Val | Gln | Lys | Gly | Ile | Tyr |      |
|     |     | 285 |     |     |     |     | 290 |     |     |     |     | 295 |     |     |     |      |
| gat | cag | ttc | gtc | aat | cgg | ctg | ggt | gaa | gcg | atg | cag | gcg | gtt | caa | ttt | 2104 |
| Asp | Gln | Phe | Val | Asn | Arg | Leu | Gly | Glu | Ala | Met | Gln | Ala | Val | Gln | Phe |      |
|     | 300 |     |     |     |     | 305 |     |     |     |     | 310 |     |     |     |     |      |
| ggt | aac | ccc | gct | gaa | cgc | aac | gac | att | gcg | atg | ggg | ccg | ttg | att | aac | 2152 |
| Gly | Asn | Pro | Ala | Glu | Arg | Asn | Asp | Ile | Ala | Met | Gly | Pro | Leu | Ile | Asn |      |
| 315 |     |     |     |     | 320 |     |     |     |     | 325 |     |     |     |     | 330 |      |
| gcc | gcg | gcg | ctg | gaa | agg | gtc | gag | caa | aaa | gtg | gcg | cgc | gca | gta | gaa | 2200 |
| Ala | Ala | Ala | Leu | Glu | Arg | Val | Glu | Gln | Lys | Val | Ala | Arg | Ala | Val | Glu |      |
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| Glu | Gly | Ala | Arg | Val | Ala | Phe | Gly | Gly | Lys | Ala | Val | Glu | Gly | Lys | Gly |      |
|     |     |     | 350 |     |     |     |     | 355 |     |     |     |     | 360 |     |     |      |
| tat | tat | tat | ccg | ccg | aca | ttg | ctg | ctg | gat | gtt | cgc | cag | gaa | atg | tcg | 2296 |
| Tyr | Tyr | Tyr | Pro | Pro | Thr | Leu | Leu | Leu | Asp | Val | Arg | Gln | Glu | Met | Ser |      |

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| Asp Thr Leu Glu Asp Ala Ile Ser Met Ala Asn Asp Ser Asp Tyr Gly     |     |     |      |
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| ctg acc tca tca atc tat acc caa aat ctg aac gtc gcg atg aaa gcc     |     |     | 2440 |
| Leu Thr Ser Ser Ile Tyr Thr Gln Asn Leu Asn Val Ala Met Lys Ala     |     |     |      |
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| Ile Lys Gly Leu Lys Phe Gly Glu Thr Tyr Ile Asn Arg Glu Asn Phe     |     |     |      |
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| Gly Ala Asp Gly Lys His Gly Leu His Glu Tyr Leu Gln Thr Gln Val     |     |     |      |
|   | 460 | 465 | 470  |
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| Val Tyr Leu Gln Ser   |     |     |      |
| 475   | 480 |     |      |
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Gly Glu His Thr Asp Tyr Asn Asp Gly Phe Val Leu Pro Cys Ala Ile  
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Asp Tyr Gln Thr Val Ile Ser Cys Ala Pro Arg Asp Asp Arg Lys Val  
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Arg Gly Val Val Lys His Leu Gln Leu Arg Asn Asn Ser Phe Gly Gly  
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Tyr His Leu Pro Leu Asp Gly Ala Gln Ile Ala Leu Asn Gly Gln Glu  
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Ala Glu Asn Gln Phe Val Gly Cys Asn Cys Gly Ile Met Asp Gln Leu  
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Arg Met Gly Glu Leu Met Ala Glu Ser His Ala Ser Met Arg Asp Asp  
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Phe Glu Ile Thr Val Pro Gln Ile Asp Thr Leu Val Glu Ile Val Lys  
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Ala Val Ile Gly Asp Lys Gly Gly Val Arg Met Thr Gly Gly Gly Phe  
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Asp Pro Asp Cys Phe Leu Cys Ala Gly Asn Val Arg Val Thr Gly Asp  
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Lys Asn Pro Asp Tyr Thr Gly Thr Tyr Val Phe Thr Asn Asp Phe Ala  
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Tyr Pro Trp Val Gln Val Phe Glu Asn Lys Gly Ala Ala Met Gly Cys  
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Ser Asn Pro His Pro His Gly Gln Ile Trp Ala Asn Ser Phe Leu Pro  
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Asn Glu Ala Glu Arg Glu Asp Arg Leu Gln Lys Glu Tyr Phe Ala Glu  
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Gln Lys Ser Pro Met Leu Val Asp Tyr Val Gln Arg Glu Leu Ala Asp  
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| Tyr Asp His Leu Gly Lys Arg Thr Ser Leu Pro Gly Ser Thr Gly Leu | 110 | 115 | 120 |       |
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| Arg Phe Gly Ala Asn Ser Val Leu Lys Pro Glu Ile Lys Arg Gly Phe | 125 | 130 | 135 |       |
| gaa tat tct gac tgt tgg gta gac gac gcc cgt ctg gta ctc gcc aac |     |     |     | 9604  |
| Glu Tyr Ser Asp Cys Trp Val Asp Asp Ala Arg Leu Val Leu Ala Asn | 140 | 145 | 150 | 155   |
| gcc cag atg gtg gtg cgt aaa ggc ggc gaa gtg ctt act cgg act cgc |     |     |     | 9652  |
| Ala Gln Met Val Val Arg Lys Gly Gly Glu Val Leu Thr Arg Thr Arg | 160 | 165 | 170 |       |
| gcc acc tct gct cgc cgc gaa aac ggc ctg tgg att gtg gaa gcg gaa |     |     |     | 9700  |
| Ala Thr Ser Ala Arg Arg Glu Asn Gly Leu Trp Ile Val Glu Ala Glu | 175 | 180 | 185 |       |
| gat atc gat acc ggc aaa aaa tat agc tgg caa gcg cgc ggc ttg gtt |     |     |     | 9748  |
| Asp Ile Asp Thr Gly Lys Lys Tyr Ser Trp Gln Ala Arg Gly Leu Val | 190 | 195 | 200 |       |
| aac gcc acc ggc ccg tgg gtg aaa cag ttc ttc gac gac ggg atg cat |     |     |     | 9796  |
| Asn Ala Thr Gly Pro Trp Val Lys Gln Phe Phe Asp Asp Gly Met His | 205 | 210 | 215 |       |
| ctg cct tcg cct tat ggc att cgc ctg atc aaa ggc agc cat att gtg |     |     |     | 9844  |
| Leu Pro Ser Pro Tyr Gly Ile Arg Leu Ile Lys Gly Ser His Ile Val | 220 | 225 | 230 | 235   |
| gtg ccg cgc gtg cat acc cag aag caa gcc tac att ctg caa aac gaa |     |     |     | 9892  |
| Val Pro Arg Val His Thr Gln Lys Gln Ala Tyr Ile Leu Gln Asn Glu | 240 | 245 | 250 |       |
| gat aaa cgt att gtg ttc gtg atc ccg tgg atg gac gag ttt tcc atc |     |     |     | 9940  |
| Asp Lys Arg Ile Val Phe Val Ile Pro Trp Met Asp Glu Phe Ser Ile | 255 | 260 | 265 |       |
| atc ggc act acc gat gtc gag tac aaa ggc gat ccg aaa gcg gtg aag |     |     |     | 9988  |
| Ile Gly Thr Thr Asp Val Glu Tyr Lys Gly Asp Pro Lys Ala Val Lys | 270 | 275 | 280 |       |
| att gaa gag agt gaa atc aat tac ctg ctg aat gtg tat aac acg cac |     |     |     | 10036 |
| Ile Glu Glu Ser Glu Ile Asn Tyr Leu Leu Asn Val Tyr Asn Thr His | 285 | 290 | 295 |       |

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Lys Arg Thr Ser Leu Pro Gly Ser Thr Gly Leu Arg Phe Gly Ala Asn  
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| Ser | Thr | Asn | Ala | Lys | Ala | Val | Gly | Glu | Phe | Gly | Ile | Asp | Thr | Ala | Asn |      |
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| Met | Phe | Glu | Phe | Trp | Asp | Trp | Val | Gly | Gly | Arg | Tyr | Ser | Leu | Trp | Ser |      |
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| Val | Gln | Leu | Leu | Arg | Ala | Gln | Ser | His | Ala   | Ile | Leu | Thr | Ser | Ser | Ala |      |
| 180 |     |     |     |     | 185 |     |     |     | 190   |     |     |     |     |     | 195 |      |
| acg | gtg | ctg | gcg | gat | gat | cct | gcc | tta | acg   | gtg | cgt | tgg | tct | gaa | ctg | 1161 |
| Thr | Val | Leu | Ala | Asp | Asp | Pro | Ala | Leu | Thr   | Val | Arg | Trp | Ser | Glu | Leu |      |
|     |     |     |     | 200 |     |     |     |     | 205   |     |     |     |     | 210 |     |      |
| gat | gaa | caa | act | cag | gcg | ctc | tat | ccg | caa   | caa | aat | ctc | cgt | cag | ccg | 1209 |
| Asp | Glu | Gln | Thr | Gln | Ala | Leu | Tyr | Pro | Gln   | Gln | Asn | Leu | Arg | Gln | Pro |      |
|     |     |     | 215 |     |     |     |     | 220 |       |     |     | 225 |     |     |     |      |
| ata | cgt | att | gtg | att | gat | agc | caa | aat | cgc   | gtg | acg | ccg | gta | cat | cgc | 1257 |
| Ile | Arg | Ile | Val | Ile | Asp | Ser | Gln | Asn | Arg   | Val | Thr | Pro | Val | His | Arg |      |
|     |     | 230 |     |     |     |     | 235 |     |       |     |     | 240 |     |     |     |      |
| att | gtg | cag | cag | ccc | ggc | gaa | acc | tgg | ttc   | gcg | cgt | acg | cag | gaa | gat | 1305 |
| Ile | Val | Gln | Gln | Pro | Gly | Glu | Thr | Trp | Phe   | Ala | Arg | Thr | Gln | Glu | Asp |      |
|     | 245 |     |     |     |     | 250 |     |     |       |     | 255 |     |     |     |     |      |
| tct | cgt | gag | tgg | ccg | gaa | acg | gtg | cgt | acc   | ttg | ctg | att | cca | gag | cat | 1353 |
| Ser | Arg | Glu | Trp | Pro | Glu | Thr | Val | Arg | Thr</ |     |     |     |     |     |     |      |

caa att aac agc atc tgg gtg gaa gcg ggg cca acg ctc gct ggc gca 1449  
 Gln Ile Asn Ser Ile Trp Val Glu Ala Gly Pro Thr Leu Ala Gly Ala  
                   295                                  300                                  305

ttg ctg cag gcg ggt tta gtc gat gag ctg att gtc tat atc gca cct 1497  
 Leu Leu Gln Ala Gly Leu Val Asp Glu Leu Ile Val Tyr Ile Ala Pro  
                   310                                  315                                  320

aaa cta tta ggc agc gac gcc cgc gga tta tgc acg ctg cca ggg ctt 1545  
 Lys Leu Leu Gly Ser Asp Ala Arg Gly Leu Cys Thr Leu Pro Gly Leu  
                   325                                  330                                  335

gag aaa tta gcc gac gcc ccc caa ttt aaa ttc aaa gag ata cgt cat 1593  
 Glu Lys Leu Ala Asp Ala Pro Gln Phe Lys Phe Lys Glu Ile Arg His  
                   340                                  345                                  350                                  355

gta ggc ccg gat gtt tgc ctg cat tta gtg ggt gca tga tctcccggct 1642  
 Val Gly Pro Asp Val Cys Leu His Leu Val Gly Ala  
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|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|
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|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|

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1. The first part of the report is a general introduction to the project, which includes a brief history of the organization and a statement of its mission.

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| ttactcactg  | atccttgacc  | ccgctgcggc | ggggttgtca | tttgctttgc | cacaagggtt | 9000 |
| ctcctctttt  | atcaatttgg  | gttgttatca | aatcgttacg | cgatgtttgt | gttatcttta | 9060 |
| atattcaccc  | tgaagagaat  | cagggtctcg | caaccctgtc | attaaggagg | agct atg   | 9117 |
|   |             |            |            |            | Met        |      |
|   |             |            |            |            | 1          |      |
| tcg tca acc cta cga gaa gcc agt aag gac acg ttg cag gcc aaa gat |             |            |            |            |            | 9165 |
| Ser Ser Thr Leu Arg Glu Ala Ser Lys Asp Thr Leu Gln Ala Lys Asp |             |            |            |            |            |      |
|   | 5           |            |            | 10         | 15         |      |
| aaa act tac cac tac tac agc ctg ccg ctt gct gct aaa tca ctg ggc |             |            |            |            |            | 9213 |
| Lys Thr Tyr His Tyr Tyr Ser Leu Pro Leu Ala Ala Lys Ser Leu Gly |             |            |            |            |            |      |
|   | 20          |            |            | 25         | 30         |      |
| gat atc acc cgt cta ccc aag tca ctc aaa gtt ttg ctc gaa aac ctg |             |            |            |            |            | 9261 |
| Asp Ile Thr Arg Leu Pro Lys Ser Leu Lys Val Leu Leu Glu Asn Leu |             |            |            |            |            |      |
|   | 35          |            |            | 40         | 45         |      |
| ctg cgc tgg cag gat ggt aac tcg gtt acc gaa gag gat atc cac gcg |             |            |            |            |            | 9309 |
| Leu Arg Trp Gln Asp Gly Asn Ser Val Thr Glu Glu Asp Ile His Ala |             |            |            |            |            |      |
|   | 50          |            |            | 55         | 60         | 65   |
| ctg gca gga tgg ctg aaa aat gcc cat gct gac cgt gaa att gcc tac |             |            |            |            |            | 9357 |
| Leu Ala Gly Trp Leu Lys Asn Ala His Ala Asp Arg Glu Ile Ala Tyr |             |            |            |            |            |      |
|   | 70          |            |            | 75         | 80         |      |
| cgc ccg gca agg gtg ctg atg cag gac ttt acc ggc gta cct gcc gtt |             |            |            |            |            | 9405 |
| Arg Pro Ala Arg Val Leu Met Gln Asp Phe Thr Gly Val Pro Ala Val |             |            |            |            |            |      |
|   | 85          |            |            | 90         | 95         |      |

|   |       |
|---|-------|
| gtt gat ctg gcg gca atg cgc gaa gcg gtt aaa cgc ctc ggc ggc gat | 9453  |
| Val Asp Leu Ala Ala Met Arg Glu Ala Val Lys Arg Leu Gly Gly Asp |       |
| 100 105 110   |       |
| act gca aag gtt aac ccg ctc tca ccg gtc gac ctg gtc att gac cac | 9501  |
| Thr Ala Lys Val Asn Pro Leu Ser Pro Val Asp Leu Val Ile Asp His |       |
| 115 120 125   |       |
| tcg gtg acc gtc gat cgt ttt ggt gat gat gag gca ttt gaa-gaa aac | 9549  |
| Ser Val Thr Val Asp Arg Phe Gly Asp Asp Glu Ala Phe Glu Glu Asn |       |
| 130 135 140 145   |       |
| gta cgc ctg gaa atg gag cgc aac cac gaa cgt tat gtg ttc ctg aaa | 9597  |
| Val Arg Leu Glu Met Glu Arg Asn His Glu Arg Tyr Val Phe Leu Lys |       |
| 150 155 160   |       |
| tgg gga aag caa gcg ttc agt cgg ttt agc gtc gtg ccg cca ggc aca | 9645  |
| Trp Gly Lys Gln Ala Phe Ser Arg Phe Ser Val Val Pro Pro Gly Thr |       |
| 165 170 175   |       |
| ggc att tgc cat cag gtt aac ctc gaa tat ctc ggc aaa gca gtg tgg | 9693  |
| Gly Ile Cys His Gln Val Asn Leu Glu Tyr Leu Gly Lys Ala Val Trp |       |
| 180 185 190   |       |
| agt gaa ttg cag gac ggt gaa tgg att gct tat ccg gat aca ctc gtt | 9741  |
| Ser Glu Leu Gln Asp Gly Glu Trp Ile Ala Tyr Pro Asp Thr Leu Val |       |
| 195 200 205   |       |
| ggt act gac tcg cac acc acc atg atc aac ggc ctt ggc gtg ctg ggg | 9789  |
| Gly Thr Asp Ser His Thr Thr Met Ile Asn Gly Leu Gly Val Leu Gly |       |
| 210 215 220 225   |       |
| tgg ggc gtt ggt ggg atc gaa gca gaa gcc gca atg tta ggc cag ccg | 9837  |
| Trp Gly Val Gly Gly Ile Glu Ala Glu Ala Ala Met Leu Gly Gln Pro |       |
| 230 235 240   |       |
| gtt tcc atg ctt atc ccg gat gta gtg ggc ttc aaa ctt acc gga aaa | 9885  |
| Val Ser Met Leu Ile Pro Asp Val Val Gly Phe Lys Leu Thr Gly Lys |       |
| 245 250 255   |       |
| tta cgt gaa ggt att acc gcc aca gac ctg gtt ctc act gtt acc caa | 9933  |
| Leu Arg Glu Gly Ile Thr Ala Thr Asp Leu Val Leu Thr Val Thr Gln |       |
| 260 265 270   |       |
| atg ctg cgc aaa cat ggc gtg gtg ggg aaa ttc gtc gaa ttt tat ggt | 9981  |
| Met Leu Arg Lys His Gly Val Val Gly Lys Phe Val Glu Phe Tyr Gly |       |
| 275 280 285   |       |
| gat ggt ctg gat tca cta ccg ttg gcg gat cgc gcc acc att gcc aat | 10029 |
| Asp Gly Leu Asp Ser Leu Pro Leu Ala Asp Arg Ala Thr Ile Ala Asn |       |
| 290 295 300 305   |       |
| atg tcg cca gaa tat ggt gcc acc tgt ggc ttc ttc cca atc gat gct | 10077 |
| Met Ser Pro Glu Tyr Gly Ala Thr Cys Gly Phe Phe Pro Ile Asp Ala |       |
| 310 315 320   |       |
| gta acc ctc gat tac atg cgt tta agc ggg cgc agc gaa gat cag gtc | 10125 |

|   |       |
|---|-------|
| Val Thr Leu Asp Tyr Met Arg Leu Ser Gly Arg Ser Glu Asp Gln Val |       |
| 325 330 335   |       |
| gag ttg gtc gaa aaa tat gcc aaa gcg cag ggc atg tgg cgt aac ccg | 10173 |
| Glu Leu Val Glu Lys Tyr Ala Lys Ala Gln Gly Met Trp Arg Asn Pro |       |
| 340 345 350   |       |
| ggc gat gaa cca att ttt acc agt acg tta gaa ctg gat atg aat gac | 10221 |
| Gly Asp Glu Pro Ile Phe Thr Ser Thr Leu Glu Leu Asp Met Asn Asp |       |
| 355 360 365   |       |
| gtt gaa gcg agc ctg gca ggg cct aaa cgc cca cag gat cgc gtt gca | 10269 |
| Val Glu Ala Ser Leu Ala Gly Pro Lys Arg Pro Gln Asp Arg Val Ala |       |
| 370 375 380 385   |       |
| ctg ccc gat gta cca aaa gca ttt gcc gcc agt aac gaa ctg gaa gtg | 10317 |
| Leu Pro Asp Val Pro Lys Ala Phe Ala Ala Ser Asn Glu Leu Glu Val |       |
| 390 395 400   |       |
| aat gcc acg cat aaa gat cgc cag ccg gtc gat tat gtt atg aac gga | 10365 |
| Asn Ala Thr His Lys Asp Arg Gln Pro Val Asp Tyr Val Met Asn Gly |       |
| 405 410 415   |       |
| cat cag tat cag tta cct gat ggc gct gtg gtc att gct gcg ata acc | 10413 |
| His Gln Tyr Gln Leu Pro Asp Gly Ala Val Val Ile Ala Ala Ile Thr |       |
| 420 425 430   |       |
| tcg tgc acc aac acc tct aac cca agt gtg ctg atg gcc gca ggc ttg | 10461 |
| Ser Cys Thr Asn Thr Ser Asn Pro Ser Val Leu Met Ala Ala Gly Leu |       |
| 435 440 445   |       |
| ctg gcg aaa aaa gcc gta act ctg ggc ctc aag cgg caa cca tgg gtc | 10509 |
| Leu Ala Lys Lys Ala Val Thr Leu Gly Leu Lys Arg Gln Pro Trp Val |       |
| 450 455 460 465   |       |
| aaa gcg tcg ctg gca ccg ggt tcg aaa gtc gtt tct gat tat ctg gca | 10557 |
| Lys Ala Ser Leu Ala Pro Gly Ser Lys Val Val Ser Asp Tyr Leu Ala |       |
| 470 475 480   |       |
| aaa gcg aaa ctg aca ccg tat ctc gac gaa ctg ggg ttt aac ctt gtg | 10605 |
| Lys Ala Lys Leu Thr Pro Tyr Leu Asp Glu Leu Gly Phe Asn Leu Val |       |
| 485 490 495   |       |
| gga tac ggt tgt acc acc tgt att ggt aac tct ggg ccg ctg ccc gat | 10653 |
| Gly Tyr Gly Cys Thr Thr Cys Ile Gly Asn Ser Gly Pro Leu Pro Asp |       |
| 500 505 510   |       |
| cct atc gaa acg gca atc aaa aaa agc gat tta acc gtc ggt gcg gtg | 10701 |
| Pro Ile Glu Thr Ala Ile Lys Lys Ser Asp Leu Thr Val Gly Ala Val |       |
| 515 520 525   |       |
| ctg tcc ggc aac cgt aac ttt gaa ggc cgt atc cat ccg ctg gtt aaa | 10749 |
| Leu Ser Gly Asn Arg Asn Phe Glu Gly Arg Ile His Pro Leu Val Lys |       |
| 530 535 540 545   |       |
| act aac tgg ctg gcc tcg ccg ccg ctg gtg gtt gcc tat gcg ctg gcg | 10797 |
| Thr Asn Trp Leu Ala Ser Pro Pro Leu Val Val Ala Tyr Ala Leu Ala |       |

| 550 |     |     |     |     |     |     |     |     |     | 555 |     |     |     |     | 560 |       |  |  |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|--|--|--|--|
| gga | aat | atg | aat | atc | aac | ctg | gct | tct | gag | cct | atc | ggc | cat | gat | cgc | 10845 |  |  |  |  |
| Gly | Asn | Met | Asn | Ile | Asn | Leu | Ala | Ser | Glu | Pro | Ile | Gly | His | Asp | Arg |       |  |  |  |  |
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| aaa | ggc | gat | ccg | gtt | tat | ctg | aaa | gat | atc | tgg | cca | tcg | gca | caa | gaa | 10893 |  |  |  |  |
| Lys | Gly | Asp | Pro | Val | Tyr | Leu | Lys | Asp | Ile | Trp | Pro | Ser | Ala | Gln | Glu |       |  |  |  |  |
| 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |     |     |     |       |  |  |  |  |
| att | gcc | cgt | gcg | gta | gaa | caa | gtc | tcc | aca | gaa | atg | ttc | cgc | aaa | gag | 10941 |  |  |  |  |
| Ile | Ala | Arg | Ala | Val | Glu | Gln | Val | Ser | Thr | Glu | Met | Phe | Arg | Lys | Glu |       |  |  |  |  |
| 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |     |     |       |  |  |  |  |
| tac | gca | gaa | gtt | ttt | gaa | ggc | aca | gca | gag | tgg | aag | gga | att | aac | gtc | 10989 |  |  |  |  |
| Tyr | Ala | Glu | Val | Phe | Glu | Gly | Thr | Ala | Glu | Trp | Lys | Gly | Ile | Asn | Val |       |  |  |  |  |
| 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     | 625 |       |  |  |  |  |
| aca | cga | tcc | gat | acc | tac | ggt | tgg | cag | gag | gac | tca | acc | tat | att | cgc | 11037 |  |  |  |  |
| Thr | Arg | Ser | Asp | Thr | Tyr | Gly | Trp | Gln | Glu | Asp | Ser | Thr | Tyr | Ile | Arg |       |  |  |  |  |
| 630 |     |     |     |     | 635 |     |     |     |     | 640 |     |     |     |     |     |       |  |  |  |  |
| tta | tcg | cct | ttc | ttt | gat | gaa | atg | cag | gca | aca | cca | gca | cca | gtg | gaa | 11085 |  |  |  |  |
| Leu | Ser | Pro | Phe | Phe | Asp | Glu | Met | Gln | Ala | Thr | Pro | Ala | Pro | Val | Glu |       |  |  |  |  |
| 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |     |     |     |     |       |  |  |  |  |
| gat | att | cac | ggt | gcg | cgg | atc | ctc | gca | atg | ctg | ggg | gat | tca | gtc | acc | 11133 |  |  |  |  |
| Asp | Ile | His | Gly | Ala | Arg | Ile | Leu | Ala | Met | Leu | Gly | Asp | Ser | Val | Thr |       |  |  |  |  |
| 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |     |     |     |       |  |  |  |  |
| act | gac | cat | atc | tct | ccg | gcg | ggc | agt | att | aag | ccc | gac | agc | cca | gcg | 11181 |  |  |  |  |
| Thr | Asp | His | Ile | Ser | Pro | Ala | Gly | Ser | Ile | Lys | Pro | Asp | Ser | Pro | Ala |       |  |  |  |  |
| 675 |     |     |     |     | 680 |     |     |     |     | 685 |     |     |     |     |     |       |  |  |  |  |
| ggt | cga | tat | cta | caa | ggt | cgg | ggt | gtt | gag | cga | aaa | gac | ttt | aac | tcc | 11229 |  |  |  |  |
| Gly | Arg | Tyr | Leu | Gln | Gly | Arg | Gly | Val | Glu | Arg | Lys | Asp | Phe | Asn | Ser |       |  |  |  |  |
| 690 |     |     |     |     | 695 |     |     |     |     | 700 |     |     |     |     | 705 |       |  |  |  |  |
| tac | ggt | tcg | cgg | cgt | ggt | aac | cat | gaa | gtg | atg | atg | cgc | ggc | acc | ttc | 11277 |  |  |  |  |
| Tyr | Gly | Ser | Arg | Arg | Gly | Asn | His | Glu | Val | Met | Met | Arg | Gly | Thr | Phe |       |  |  |  |  |
| 710 |     |     |     |     | 715 |     |     |     |     | 720 |     |     |     |     |     |       |  |  |  |  |
| gcc | aat | att | cgc | atc | cgt | aat | gaa | atg | gtg | cct | ggc | gtt | gaa | ggg | ggg | 11325 |  |  |  |  |
| Ala | Asn | Ile | Arg | Ile | Arg | Asn | Glu | Met | Val | Pro | Gly | Val | Glu | Gly | Gly |       |  |  |  |  |
| 725 |     |     |     |     | 730 |     |     |     |     | 735 |     |     |     |     |     |       |  |  |  |  |
| atg | acg | cgg | cat | tta | cct | gac | agc | gac | gta | gtc | tct | att | tat | gat | gct | 11373 |  |  |  |  |
| Met | Thr | Arg | His | Leu | Pro | Asp | Ser | Asp | Val | Val | Ser | Ile | Tyr | Asp | Ala |       |  |  |  |  |
| 740 |     |     |     |     | 745 |     |     |     |     | 750 |     |     |     |     |     |       |  |  |  |  |
| gcg | atg | cgc | tat | aag | cag | gag | caa | acg | ccg | ctg | gcg | gtg | att | gcc | ggg | 11421 |  |  |  |  |
| Ala | Met | Arg | Tyr | Lys | Gln | Glu | Gln | Thr | Pro | Leu | Ala | Val | Ile | Ala | Gly |       |  |  |  |  |
| 755 |     |     |     |     | 760 |     |     |     |     | 765 |     |     |     |     |     |       |  |  |  |  |
| aaa | gag | tat | gga | tca | ggc | tcc | agt | cgt | gac | tgg | gcg | gca | aaa | ggt | ccg | 11469 |  |  |  |  |
| Lys | Glu | Tyr | Gly | Ser | Gly | Ser | Ser | Arg | Asp | Trp | Ala | Ala | Lys | Gly | Pro |       |  |  |  |  |
| 770 |     |     |     |     | 775 |     |     |     |     | 780 |     |     |     |     | 785 |       |  |  |  |  |

cgt ctg ctt ggt att cgt gtg gtg att gcc gaa tcg ttt gaa cga att 11517  
 Arg Leu Leu Gly Ile Arg Val Val Ile Ala Glu Ser Phe Glu Arg Ile  
                     790                    795                    800

cac cgt tcg aat tta att ggc atg ggc atc ctg ccg ctg gaa ttt ccg 11565  
 His Arg Ser Asn Leu Ile Gly Met Gly Ile Leu Pro Leu Glu Phe Pro  
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 Gln Gly Val Thr Arg Lys Thr Leu Gly Leu Thr Gly Glu Glu Lys Ile  
                     820                    825                    830

gat att ggc gat ctg caa aac cta caa ccc ggc gcg acg gtt ccg gtg 11661  
 Asp Ile Gly Asp Leu Gln Asn Leu Gln Pro Gly Ala Thr Val Pro Val  
                     835                    840                    845

acg ctt acg cgc gcg gat ggt agc cag gaa gtc gta ccc tgc cgt tgt 11709  
 Thr Leu Thr Arg Ala Asp Gly Ser Gln Glu Val Val Pro Cys Arg Cys  
                     850                    855                    860                    865

cgt atc gac acc gcg acg gag ttg acc tac tac cag aac gac ggc att 11757  
 Arg Ile Asp Thr Ala Thr Glu Leu Thr Tyr Tyr Gln Asn Asp Gly Ile  
                     870                    875                    880

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Asp Lys Thr Tyr His Tyr Tyr Ser Leu Pro Leu Ala Ala Lys Ser Leu  
                     20                    25                    30

Gly Asp Ile Thr Arg Leu Pro Lys Ser Leu Lys Val Leu Leu Glu Asn  
                     35                    40                    45

Leu Leu Arg Trp Gln Asp Gly Asn Ser Val Thr Glu Glu Asp Ile His  
                     50                    55                    60

Ala Leu Ala Gly Trp Leu Lys Asn Ala His Ala Asp Arg Glu Ile Ala  
                     65                    70                    75                    80

Tyr Arg Pro Ala Arg Val Leu Met Gln Asp Phe Thr Gly Val Pro Ala  
                     85                    90                    95

Val Val Asp Leu Ala Ala Met Arg Glu Ala Val Lys Arg Leu Gly Gly

| 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Thr | Ala | Lys | Val | Asn | Pro | Leu | Ser | Pro | Val | Asp | Leu | Val | Ile | Asp |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| His | Ser | Val | Thr | Val | Asp | Arg | Phe | Gly | Asp | Asp | Glu | Ala | Phe | Glu | Glu |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Asn | Val | Arg | Leu | Glu | Met | Glu | Arg | Asn | His | Glu | Arg | Tyr | Val | Phe | Leu |
|     | 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     | 160 |
| Lys | Trp | Gly | Lys | Gln | Ala | Phe | Ser | Arg | Phe | Ser | Val | Val | Pro | Pro | Gly |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Thr | Gly | Ile | Cys | His | Gln | Val | Asn | Leu | Glu | Tyr | Leu | Gly | Lys | Ala | Val |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Trp | Ser | Glu | Leu | Gln | Asp | Gly | Glu | Trp | Ile | Ala | Tyr | Pro | Asp | Thr | Leu |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Val | Gly | Thr | Asp | Ser | His | Thr | Thr | Met | Ile | Asn | Gly | Leu | Gly | Val | Leu |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Gly | Trp | Gly | Val | Gly | Gly | Ile | Glu | Ala | Glu | Ala | Ala | Met | Leu | Gly | Gln |
|     | 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     | 240 |
| Pro | Val | Ser | Met | Leu | Ile | Pro | Asp | Val | Val | Gly | Phe | Lys | Leu | Thr | Gly |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Lys | Leu | Arg | Glu | Gly | Ile | Thr | Ala | Thr | Asp | Leu | Val | Leu | Thr | Val | Thr |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Gln | Met | Leu | Arg | Lys | His | Gly | Val | Val | Gly | Lys | Phe | Val | Glu | Phe | Tyr |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Gly | Asp | Gly | Leu | Asp | Ser | Leu | Pro | Leu | Ala | Asp | Arg | Ala | Thr | Ile | Ala |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Asn | Met | Ser | Pro | Glu | Tyr | Gly | Ala | Thr | Cys | Gly | Phe | Phe | Pro | Ile | Asp |
|     | 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     | 320 |
| Ala | Val | Thr | Leu | Asp | Tyr | Met | Arg | Leu | Ser | Gly | Arg | Ser | Glu | Asp | Gln |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Val | Glu | Leu | Val | Glu | Lys | Tyr | Ala | Lys | Ala | Gln | Gly | Met | Trp | Arg | Asn |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Pro | Gly | Asp | Glu | Pro | Ile | Phe | Thr | Ser | Thr | Leu | Glu | Leu | Asp | Met | Asn |
|     |     |     | 355 |     |     |     | 360 |     |     |     |     |     | 365 |     |     |
| Asp | Val | Glu | Ala | Ser | Leu | Ala | Gly | Pro | Lys | Arg | Pro | Gln | Asp | Arg | Val |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Ala | Leu | Pro | Asp | Val | Pro | Lys | Ala | Phe | Ala | Ala | Ser | Asn | Glu | Leu | Glu |
|     | 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     | 400 |
| Val | Asn | Ala | Thr | His | Lys | Asp | Arg | Gln | Pro | Val | Asp | Tyr | Val | Met | Asn |

| 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | His | Gln | Tyr | Gln | Leu | Pro | Asp | Gly | Ala | Val | Val | Ile | Ala | Ile |
| 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |     |     |
| Thr | Ser | Cys | Thr | Asn | Thr | Ser | Asn | Pro | Ser | Val | Leu | Met | Ala | Gly |
| 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |     |
| Leu | Leu | Ala | Lys | Lys | Ala | Val | Thr | Leu | Gly | Leu | Lys | Arg | Gln | Pro |
| 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Val | Lys | Ala | Ser | Leu | Ala | Pro | Gly | Ser | Lys | Val | Val | Ser | Asp | Tyr |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     |
| Ala | Lys | Ala | Lys | Leu | Thr | Pro | Tyr | Leu | Asp | Glu | Leu | Gly | Phe | Asn |
| 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |     |     |     |
| Val | Gly | Tyr | Gly | Cys | Thr | Thr | Cys | Ile | Gly | Asn | Ser | Gly | Pro | Leu |
| 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |     |     |
| Asp | Pro | Ile | Glu | Thr | Ala | Ile | Lys | Lys | Ser | Asp | Leu | Thr | Val | Gly |
| 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |     |
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| Arg | Lys | Gly | Asp | Pro | Val | Tyr | Leu | Lys | Asp | Ile | Trp | Pro | Ser | Ala |
| 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |     |     |
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| Val | Thr | Arg | Ser | Asp | Thr | Tyr | Gly | Trp | Gln | Glu | Asp | Ser | Thr | Tyr |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     |
| Arg | Leu | Ser | Pro | Phe | Phe | Asp | Glu | Met | Gln | Ala | Thr | Pro | Ala | Pro |
| 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |     |     |     |
| Glu | Asp | Ile | His | Gly | Ala | Arg | Ile | Leu | Ala | Met | Leu | Gly | Asp | Ser |
| 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |     |     |
| Thr | Thr | Asp | His | Ile | Ser | Pro | Ala | Gly | Ser | Ile | Lys | Pro | Asp | Ser |
| 675 |     |     |     |     | 680 |     |     |     |     | 685 |     |     |     |     |
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| Ser | Tyr | Gly | Ser | Arg | Arg | Gly | Asn | His | Glu | Val | Met | Met | Arg | Gly |
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| 705                     | 710                         | 715                 | 720 |
|-------------------------|-----------------------------|---------------------|-----|
| Phe Ala Asn Ile Arg     | Ile Arg Asn Glu Met Val     | Pro Gly Val Glu Gly |     |
|                         | 725                         | 730                 | 735 |
| Gly Met Thr Arg His Leu | Pro Asp Ser Asp Val Val Ser | Ile Tyr Asp         |     |
|                         | 740                         | 745                 | 750 |
| Ala Ala Met Arg Tyr Lys | Gln Glu Gln Thr Pro Leu     | Ala Val Ile Ala     |     |
|                         | 755                         | 760                 | 765 |
| Gly Lys Glu Tyr Gly Ser | Gly Ser Ser Arg Asp Trp     | Ala Ala Lys Gly     |     |
|                         | 770                         | 775                 | 780 |
| Pro Arg Leu Leu Gly Ile | Arg Val Val Ile Ala Glu     | Ser Phe Glu Arg     |     |
|                         | 785                         | 790                 | 800 |
| Ile His Arg Ser Asn Leu | Ile Gly Met Gly Ile Leu     | Pro Leu Glu Phe     |     |
|                         | 805                         | 810                 | 815 |
| Pro Gln Gly Val Thr Arg | Lys Thr Leu Gly Leu Thr     | Gly Glu Glu Lys     |     |
|                         | 820                         | 825                 | 830 |
| Ile Asp Ile Gly Asp Leu | Gln Asn Leu Gln Pro Gly     | Ala Thr Val Pro     |     |
|                         | 835                         | 840                 | 845 |
| Val Thr Leu Thr Arg Ala | Asp Gly Ser Gln Glu Val     | Val Pro Cys Arg     |     |
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| Cys Arg Ile Asp Thr Ala | Thr Glu Leu Thr Tyr Tyr     | Gln Asn Asp Gly     |     |
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1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

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Pro Ser Ala Val Leu Pro Leu Ala Ala Asp Leu Ser Ala Ile Asn Ala

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Arg | Phe | Gly | Trp | Gln | Ala | Glu | Glu | Ala | Val | Asp | Ile | Ala | Arg | Asn |
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| Gln | Ile | Ala | Asp | Leu | Val | Gly | Ala | Asp | Pro | Arg | Glu | Ile | Val | Phe | Thr |
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| Ile        | Ser        | Asp        | Asn         | Thr        | Val         | Met   | Thr | Thr | Ser | Arg | Asp | Val | Leu   | Glu | Thr |       |
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Lys Pro Leu Glu Asn Leu Lys Ile Glu Gly Ile Leu Glu Lys Leu Lys  
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Ile Thr Pro Glu Pro Arg Asp Glu Ser Ile Arg Leu Asp Lys Pro Val

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90

95

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Glu | Asn | Ala | Val | Arg | Gln | Leu | Ala | Gly | Val | Asn | Gln | Val | Gln | Val | Leu |      |
|     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |     |     |      |
| ttc | gcc | acc | gaa | aaa | ctg | gtg | gtc | gat | gcc | gac | aat | gac | att | cgt | gca | 8864 |
| Phe | Ala | Thr | Glu | Lys | Leu | Val | Val | Asp | Ala | Asp | Asn | Asp | Ile | Arg | Ala |      |
|     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |     |     |      |
| caa | gtt | gaa | tct | gcg | ctg | caa | aaa | gca | ggc | tat | tcc | ctg | cgc | gat | gaa | 8912 |
| Gln | Val | Glu | Ser | Ala | Leu | Gln | Lys | Ala | Gly | Tyr | Ser | Leu | Arg | Asp | Glu |      |
|     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |     |     |      |
| cag | gcc | gcc | gaa | gaa | ccg | caa | gca | tca | cgc | ctg | aaa | gag | aat | ctg | ccg | 8960 |
| Gln | Ala | Ala | Glu | Glu | Pro | Gln | Ala | Ser | Arg | Leu | Lys | Glu | Asn | Leu | Pro |      |
| 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |     | 130 |      |
| ctg | att | acg | cta | atc | gtg | atg | atg | gca | atc | agc | tgg | ggc | ctg | gag | cag | 9008 |
| Leu | Ile | Thr | Leu | Ile | Val | Met | Met | Ala | Ile | Ser | Trp | Gly | Leu | Glu | Gln |      |
|     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     | 145 |     |      |
| ttc | aat | cat | ccg | ttc | ggg | caa | ctg | gcg | ttt | atc | gcg | acc | acg | ctg | gtt | 9056 |
| Phe | Asn | His | Pro | Phe | Gly | Gln | Leu | Ala | Phe | Ile | Ala | Thr | Thr | Leu | Val |      |
|     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |     |     |      |
| ggg | ctg | tac | ccg | att | gct | cgt | cag | gca | tta | cgg | ttg | atc | aaa | tcc | ggc | 9104 |
| Gly | Leu | Tyr | Pro | Ile | Ala | Arg | Gln | Ala | Leu | Arg | Leu | Ile | Lys | Ser | Gly |      |
|     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |     |     |      |
| agc | tac | ttc | gcc | att | gaa | acc | tta | atg | agc | gta | gcc | gct | att | ggc | gca | 9152 |
| Ser | Tyr | Phe | Ala | Ile | Glu | Thr | Leu | Met | Ser | Val | Ala | Ala | Ile | Gly | Ala |      |
|     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |     |      |
| ctg | ttt | att | ggc | gca | acg | gct | gaa | gct | gcg | atg | gtg | ttg | ctg | ctg | ttt | 9200 |
| Leu | Phe | Ile | Gly | Ala | Thr | Ala | Glu | Ala | Ala | Met | Val | Leu | Leu | Leu | Phe |      |
| 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     | 210 |      |
| ttg | att | ggc | gaa | cga | ctg | gaa | ggc | tgg | gcc | gcc | agc | cgc | gcg | cgt | cag | 9248 |
| Leu | Ile | Gly | Glu | Arg | Leu | Glu | Gly | Trp | Ala | Ala | Ser | Arg | Ala | Arg | Gln |      |
|     |     |     |     | 215 |     |     |     | 220 |     |     |     |     | 225 |     |     |      |
| ggc | gtt | agc | gcg | tta | atg | gcg | ctg | aaa | cca | gaa | acc | gcc | acg | cgc | ctg | 9296 |
| Gly | Val | Ser | Ala | Leu | Met | Ala | Leu | Lys | Pro | Glu | Thr | Ala | Thr | Arg | Leu |      |
|     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |     |     |      |
| cgt | aag | ggc | gag | cgg | gaa | gag | gtg | gcg | att | aac | agc | ctg | cgc | cct | ggc | 9344 |
| Arg | Lys | Gly | Glu | Arg | Glu | Glu | Val | Ala | Ile | Asn | Ser | Leu | Arg | Pro | Gly |      |
|     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |     |     |      |
| gat | gtg | att | gaa | gtc | gcc | gca | ggc | ggg | cgt | ttg | cct | gcc | gac | ggc | aaa | 9392 |
| Asp | Val | Ile | Glu | Val | Ala | Ala | Gly | Gly | Arg | Leu | Pro | Ala | Asp | Gly | Lys |      |
|     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |     |     |      |
| ctg | ctc | tca | ccg | ttt | gcc | agt | ttt | gat | gaa | agc | gcc | ctg | acc | ggc | gaa | 9440 |
| Leu | Leu | Ser | Pro | Phe | Ala | Ser | Phe | Asp | Glu | Ser | Ala | Leu | Thr | Gly | Glu |      |
| 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |     | 290 |      |
| tcc | att | ccg | gtg | gag | cgc | gca | acg | ggc | gat | aaa | gtc | cct | gct | ggc | gcc | 9488 |
| Ser | Ile | Pro | Val | Glu | Arg | Ala | Thr | Gly | Asp | Lys | Val | Pro | Ala | Gly | Ala |      |

| 295 |     |     |     |     |     |     |     | 300 |     |     |     | 305 |     |     |     |       |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| acc | agc | gta | gac | cgt | ctg | gtg | acg | ttg | gaa | gtg | ctg | tca | gaa | ccg | gga | 9536  |
| Thr | Ser | Val | Asp | Arg | Leu | Val | Thr | Leu | Glu | Val | Leu | Ser | Glu | Pro | Gly |       |
|     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |     |     |       |
| gcc | agc | gcc | att | gac | cgg | att | ctg | aaa | ctg | atc | gaa | gaa | gcc | gaa | gag | 9584  |
| Ala | Ser | Ala | Ile | Asp | Arg | Ile | Leu | Lys | Leu | Ile | Glu | Glu | Ala | Glu | Glu |       |
|     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |     |     |       |
| cgt | cgc | gct | ccc | att | gag | cgg | ttt | atc | gac | cgt | ttc | agc | cgt | atc | tat | 9632  |
| Arg | Arg | Ala | Pro | Ile | Glu | Arg | Phe | Ile | Asp | Arg | Phe | Ser | Arg | Ile | Tyr |       |
|     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |     |     |       |
| acg | ccc | gcg | att | atg | gcc | gtc | gct | ctg | ctg | gtg | acg | ctg | gtg | cca | ccg | 9680  |
| Thr | Pro | Ala | Ile | Met | Ala | Val | Ala | Leu | Leu | Val | Thr | Leu | Val | Pro | Pro |       |
| 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |     | 370 |       |
| ctg | ctg | ttt | gcc | gcc | agc | tgg | cag | gag | tgg | att | tat | aaa | ggg | ctg | acg | 9728  |
| Leu | Leu | Phe | Ala | Ala | Ser | Trp | Gln | Glu | Trp | Ile | Tyr | Lys | Gly | Leu | Thr |       |
|     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |     | 385 |     |       |
| ctg | ctg | ctg | att | ggc | tgc | ccg | tgt | gcg | tta | gtt | atc | tca | acg | cct | gcg | 9776  |
| Leu | Leu | Leu | Ile | Gly | Cys | Pro | Cys | Ala | Leu | Val | Ile | Ser | Thr | Pro | Ala |       |
|     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |     |     |       |
| gcg | att | acc | tcc | ggg | ctg | gcg | gcg | gca | gcg | cgt | cgt | ggg | gcg | ttg | att | 9824  |
| Ala | Ile | Thr | Ser | Gly | Leu | Ala | Ala | Ala | Ala | Arg | Arg | Gly | Ala | Leu | Ile |       |
|     | 405 |     |     |     |     | 410 |     |     |     |     |     | 415 |     |     |     |       |
| aaa | ggc | gga | gcg | gcg | ctg | gaa | cag | ctg | ggc | cgt | gtt | act | cag | gtg | gcg | 9872  |
| Lys | Gly | Gly | Ala | Ala | Leu | Glu | Gln | Leu | Gly | Arg | Val | Thr | Gln | Val | Ala |       |
|     | 420 |     |     |     |     | 425 |     |     |     | 430 |     |     |     |     |     |       |
| ttt | gat | aaa | acc | ggc | acg | ctg | acc | gtc | ggc | aaa | ccg | cgc | gtt | acc | gcg | 9920  |
| Phe | Asp | Lys | Thr | Gly | Thr | Leu | Thr | Val | Gly | Lys | Pro | Arg | Val | Thr | Ala |       |
| 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |     | 450 |       |
| att | cat | ccg | gca | acg | ggc | att | agt | gaa | tct | gaa | ctg | ctg | aca | ctg | gcg | 9968  |
| Ile | His | Pro | Ala | Thr | Gly | Ile | Ser | Glu | Ser | Glu | Leu | Leu | Thr | Leu | Ala |       |
|     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |     | 465 |     |       |
| gcg | gcg | gtc | gag | caa | ggc | gcg | acg | cat | cca | ctg | gcg | caa | gcc | atc | gta | 10016 |
| Ala | Ala | Val | Glu | Gln | Gly | Ala | Thr | His | Pro | Leu | Ala | Gln | Ala | Ile | Val |       |
|     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |     |     |       |
| cgc | gaa | gca | cag | gtt | gct | gaa | ctc | gcc | att | ccc | acc | gcc | gaa | tca | cag | 10064 |
| Arg | Glu | Ala | Gln | Val | Ala | Glu | Leu | Ala | Ile | Pro | Thr | Ala | Glu | Ser | Gln |       |
|     | 485 |     |     |     |     | 490 |     |     |     |     |     | 495 |     |     |     |       |
| cgg | gcg | ctg | gtc | ggg | tct | ggc | att | gaa | gcg | cag | gtt | aac | ggc | gag | cgc | 10112 |
| Arg |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |

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| cgt aac gat gac gtg ctt ggt gtc att gcg tta cag gat acc ctg cgc   | 10256 |
| Arg Asn Asp Asp Val Leu Gly Val Ile Ala Leu Gln Asp Thr Leu Arg   |       |
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| gcc gat gct gca act gcc atc agt gaa ctg aac gcg ctg gcc gtc aaa   | 10304 |
| Ala Asp Ala Ala Thr Ala Ile Ser Glu Leu Asn Ala Leu Gly Val Lys   |       |
| 565 570 575   |       |
| ggg gtg atc ctc acc ggc gat aat cca cgc gca gcg gcg gca att gcc   | 10352 |
| Gly Val Ile Leu Thr Gly Asp Asn Pro Arg Ala Ala Ala Ala Ile Ala   |       |
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| Gly Glu Leu Gly Leu Glu Phe Lys Ala Gly Leu Leu Pro Glu Asp Lys   |       |
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| gtc aaa gcg gtg acc gag ctg aat caa cat gcg ccg ctg gcg atg gtc   | 10448 |
| Val Lys Ala Val Thr Glu Leu Asn Gln His Ala Pro Leu Ala Met Val   |       |
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| ggt gac ggt att aac gac gcg cca gcg atg aaa gct gcc gcc atc ggg   | 10496 |
| Gly Asp Gly Ile Asn Asp Ala Pro Ala Met Lys Ala Ala Ala Ile Gly   |       |
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| att gca atg ggt agc ggc aca gac gtg gcg ctg gaa acc gcc gac gca   | 10544 |
| Ile Ala Met Gly Ser Gly Thr Asp Val Ala Leu Glu Thr Ala Asp Ala   |       |
| 645 650 655   |       |
| gca tta acc cat aac cac ctg cgc ggc ctg gtg caa atg att gaa ctg   | 10592 |
| Ala Leu Thr His Asn His Leu Arg Gly Leu Val Gln Met Ile Glu Leu   |       |
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| 675 680 685 690   |       |
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Arg Gln Gly Val Ser Ala Leu Met Ala Leu Lys Pro Glu Thr Ala Thr  
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Pro Gly Asp Val Ile Glu Val Ala Ala Gly Gly Arg Leu Pro Ala Asp  
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CCPDB

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| Leu | Val | Pro | Gln | Glu | Phe | Asn | Phe | Asn   | Pro | Phe | Glu | Thr | Val | Gln | Gln |      |
|     |     |     | 85  |     |     |     |     | 90    |     |     |     |     | 95  |     |     |      |
| att | gtg | gtg | aat | cag | gca | ggg | tac | tac   | ggc | gtg | gag | cgc | aaa | gaa | gcg | 4413 |
| Ile | Val | Val | Asn | Gln | Ala | Gly | Tyr | Tyr   | Gly | Val | Glu | Arg | Lys | Glu | Ala |      |
|     |     | 100 |     |     |     |     | 105 |       |     |     |     | 110 |     |     |     |      |
| tac | atc | cgc | agc | gaa | aag | tat | ctt | aaa   | caa | ctc | gat | cta | tgg | gga | aaa | 4461 |
| Tyr | Ile | Arg | Ser | Glu | Lys | Tyr | Leu | Lys   | Gln | Leu | Asp | Leu | Trp | Gly | Lys |      |
|     | 115 |     |     |     |     | 120 |     |       |     |     | 125 |     |     |     |     |      |
| cgc | aac | gaa | cgt | gcg | cgt | atg | tta | tct   | ggc | ggg | atg | aag | cgc | cgt | tta | 4509 |
| Arg | Asn | Glu | Arg | Ala | Arg | Met | Leu | Ser   | Gly | Gly | Met | Lys | Arg | Arg | Leu |      |
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| Met | Ile | Ala | Arg | Ala | Leu | Met | His | Glu   | Pro | Lys | Leu | Leu | Ile | Leu | Asp |      |
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| gaa | ccg | acc | gca | ggc | gtg | gat | att | gaa   | ctt | cgc | cgc | tca | atg | tgg | ggc | 4605 |
| Glu | Pro | Thr | Ala | Gly | Val | Asp | Ile | Glu   | Leu | Arg | Arg | Ser | Met | Trp | Gly |      |
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| ttt | ttg | aag | gat | tta | aac | gac | aaa | ggc   | acc | acc | atc | att | ctc | acc | aca | 4653 |
| Phe | Leu | Lys | Asp | Leu | Asn | Asp | Lys | Gly   | Thr | Thr | Ile | Ile | Leu | Thr | Thr |      |
|     |     | 180 |     |     |     |     | 185 |       |     |     |     | 190 |     |     |     |      |
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| His | Tyr | Leu | Glu | Glu | Ala | Glu | Met | Leu   | Cys | Arg | Asn | Ile | Gly | Ile | Ile |      |
|     | 195 |     |     |     |     | 200 |     |       |     |     | 205 |     |     |     |     |      |
| caa | cac | ggt | gag | ctg | gtg | gaa | aat | acc   | tcg | atg | aag | gcg | ctg | ctg | gcg | 4749 |
| Gln | His | Gly | Glu | Leu | Val | Glu | Asn | Thr   | Ser | Met | Lys | Ala | Leu | Leu | Ala |      |
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| aag | ctg | aaa | tcg | gaa | acc | ttt | att | ctc   | gat | ctc | gca | ccg | aaa | agc | ccg | 4797 |
| Lys | Leu | Lys | Ser | Glu | Thr | Phe | Ile | Leu   | Asp | Leu | Ala | Pro | Lys | Ser | Pro |      |
|     |     |     |     | 230 |     |     |     |       | 235 |     |     |     |     | 240 |     |      |
| tta | ccg | aag | ctc | gat | ggc | tat | cag | tat   | cga | ctg | gtc | gat | acc | gcg | acg | 4845 |
| Leu | Pro | Lys | Leu | Asp | Gly | Tyr | Gln | Tyr   | Arg | Leu | Val | Asp | Thr | Ala | Thr |      |
|     |     |     | 245 |     |     |     |     | 250   |     |     |     |     | 255 |     |     |      |
| ctg | gaa | gtt | gaa | gtg | ctg | cgt | gag | cag   | ggg | atc | aac | agc | gta | ttt | acg | 4893 |
| Leu | Glu | Val | Glu | Val | Leu | Arg | Glu | Gln   | Gly | Ile | Asn | Ser | Val | Phe | Thr |      |
|     |     | 260 |     |     |     |     | 265 |       |     |     |     | 270 |     |     |     |      |
| cag | tta | agt | gag | cag | ggc | att | cag | gta   | tta | agt | atg | cgt | aac | aaa | gct | 4941 |
| Gln | Leu | Ser | Glu | Gln | Gly | Ile | Gln | Val   | Leu | Ser | Met | Arg | Asn | Lys | Ala |      |
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 Gln Ile Val Val Asn Gln Ala Gly Tyr Tyr Gly Val Glu Arg Lys Glu

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| Lys | Arg | Asn | Glu | Arg | Ala | Arg | Met | Leu | Ser | Gly | Gly | Met | Lys | Arg | Arg |  |
| 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |     |  |
| Leu | Met | Ile | Ala | Arg | Ala | Leu | Met | His | Glu | Pro | Lys | Leu | Leu | Ile | Leu |  |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |  |
| Asp | Glu | Pro | Thr | Ala | Gly | Val | Asp | Ile | Glu | Leu | Arg | Arg | Ser | Met | Trp |  |
| 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |     |     |     |     |  |
| Gly | Phe | Leu | Lys | Asp | Leu | Asn | Asp | Lys | Gly | Thr | Thr | Ile | Ile | Leu | Thr |  |
| 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |     |     |  |
| Thr | His | Tyr | Leu | Glu | Glu | Ala | Glu | Met | Leu | Cys | Arg | Asn | Ile | Gly | Ile |  |
| 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |     |  |
| Ile | Gln | His | Gly | Glu | Leu | Val | Glu | Asn | Thr | Ser | Met | Lys | Ala | Leu | Leu |  |
| 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |     |  |
| Ala | Lys | Leu | Lys | Ser | Glu | Thr | Phe | Ile | Leu | Asp | Leu | Ala | Pro | Lys | Ser |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |
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| 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |     |     |     |  |
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| 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |     |     |  |
| Ala | Asn | Arg | Leu | Glu | Glu | Leu | Phe | Val | Ser | Leu | Val | Asn | Glu | Lys | Gln |  |
| 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |     |  |
| Gly | Asp | Arg | Ala |     |     |     |     |     |     |     |     |     |     |     |     |  |
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&lt;211&gt; 256

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&lt;213&gt; Escherichia coli

&lt;220&gt;

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&lt;400&gt; 70

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | His | Arg | Phe | Met | Arg | Ile | Trp | Val | Gln | Thr | Leu | Val | Pro | Pro | Val |
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Val Glu Tyr Gln Cys Arg Glu Gly Tyr Cys Gly Ser Cys Arg Thr Arg  
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Leu Val Ala Gly Gln Val Asp Trp Ile Ala Glu Pro Leu Ala Phe Ile  
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1. The first part of the report is a general introduction to the project, which includes a brief history of the organization and a statement of its mission.

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| Met | Pro | Leu | Asp | Ser | Thr | Asn | Ile | Arg | Gln | Thr | Met | Thr | Asp | Leu | Ile |
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Gln Arg Pro Arg Arg Leu Arg Lys Ser Pro Ala Leu Arg Ala Met Phe

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| Glu | Glu | Thr | Thr | Leu | Ser | Leu | Asn | Asp | Leu | Val | Leu | Pro | Ile | Phe | Val |  |  |  |  |
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| Glu | Glu | Glu | Ile | Asp | Asp | Tyr | Lys | Ala | Val | Glu | Ala | Met | Pro | Gly | Val |  |  |  |  |
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| Met | Arg | Ile | Pro | Glu | Lys | His | Leu | Ala | Arg | Glu | Ile | Glu | Arg | Ile | Ala |  |  |  |  |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |  |  |  |  |
| Asn | Ala | Gly | Ile | Arg | Ser | Val | Met | Thr | Phe | Gly | Ile | Ser | His | His | Thr |  |  |  |  |
| 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |     |     |     |     |  |  |  |  |
| Asp | Glu | Thr | Gly | Ser | Asp | Ala | Trp | Arg | Glu | Asp | Gly | Leu | Val | Ala | Arg |  |  |  |  |
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| Met | Ser | Arg | Ile | Cys | Lys | Gln | Thr | Val | Pro | Glu | Met | Ile | Val | Met | Ser |  |  |  |  |
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| Asp | Thr | Cys | Phe | Cys | Glu | Tyr | Thr | Ser | His | Gly | His | Cys | Gly | Val | Leu |  |  |  |  |
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| Gln | Ala | Val | Val | Ala | Ala | Ala | Ala | Ala | Gly | Ala | Asp | Phe | Ile | Ala | Pro |  |  |  |  |
| 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |     |     |     |     |  |  |  |  |
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325

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Pro Pro Arg Ile Ser Ala Ala Ala His Asn Glu Leu Thr Lys Leu Gly

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| Thr Arg Asp Pro Asp Ile Tyr Ala Ile Gly Asp Cys Ala Ser Cys Pro |  |     |  |     |  |     |
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| Arg Pro Glu Gly Gly Phe Val Pro Pro Arg Ala Gln Ala Ala His Gln |  |     |  |     |  |     |
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| Met Ala Thr Cys Ala Met Asn Asn Ile Leu Ala Gln Met Asn Gly Lys |  |     |  |     |  |     |
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| Ser Met Met Ile Glu Gly Arg Ile Ala Arg Phe Val Tyr Ile Ser Leu |  |     |  |     |  |     |
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| Tyr Arg Met His Gln Ile Ala Leu His Gly Tyr Phe Lys Thr Gly Leu |  |     |  |     |  |     |
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Leu His

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<211> 11045

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<213> Escherichia coli

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| Lys | Gly | Arg | Lys | Leu | Pro | His | Phe | Asp | Ala | Val | Ile | Pro | Arg | Ile | Gly |      |
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| Thr | Ala | Ile | Thr | Phe | Tyr | Gly | Thr | Ala | Ala | Leu | Arg | Gln | Phe | Glu | Met |      |
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| Ser        | Phe        | His        | Met        | Gln        | Thr        | Ala  | Gln | Val | Gly | Ile | Met | Leu  | Thr | Ile | Tyr |      |
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| Gln        | Val        | Glu        | Arg        | Arg        | Lys        | Leu  | Leu | Ile | Cys | Leu | Phe | Val  | Val | Phe | Ile |      |
|            | 75         |            |            |            |            | 80   |     |     |     |     | 85  |      |     |     |     |      |
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| 90         |            |            |            |            | 95         |      |     |     |     | 100 |     |      |     |     | 105 |      |
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| Ile        | Ser        | Arg        | Ile        | Gly        | Val        | Ala  | Phe | Ala | His | Ala | Ile | Phe  | Trp | Ser | Ile |      |
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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
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| Thr | Val | Val | Val | Val | Thr | Ala | His | Tyr | Thr | Ala | Tyr | Ser | Tyr | Ile | Glu |      |
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| Pro | Phe | Val | Gln | Asn | Ile | Ala | Gly | Phe | Ser | Ala | Asn | Phe | Ala | Thr | Ala |      |
|     | 235 |     |     |     |     | 240 |     |     |     |     | 245 |     |     |     |     |      |
| tta | ctg | tta | tta | ctc | ggt | ggt | gcg | ggc | att | att | ggc | agc | gtg | att | ttc | 7059 |
| Leu | Leu | Leu | Leu | Leu | Gly | Gly | Ala | Gly | Ile | Ile | Gly | Ser | Val | Ile | Phe |      |
| 250 |     |     |     |     | 255 |     |     |     | 260 |     |     |     |     |     | 265 |      |
| ggt | aaa | ctg | ggt | aat | cag | tat | gcg | tct | gcg | ttg | gtg | agt | acg | gcg | att | 7107 |
| Gly | Lys | Leu | Gly | Asn | Gln | Tyr | Ala | Ser | Ala | Leu | Val | Ser | Thr | Ala | Ile |      |
|     |     |     |     | 270 |     |     |     | 275 |     |     |     |     |     | 280 |     |      |
| gcg | ctg | ttg | ctg | gtg | tgc | ctg | gca | ttg | ctg | tta | cct | gcg | gcg | aac | agt | 7155 |
| Ala | Leu | Leu | Leu | Val | Cys | Leu | Ala | Leu | Leu | Leu | Pro | Ala | Ala | Asn | Ser |      |
|     |     |     |     | 285 |     |     |     | 290 |     |     |     |     | 295 |     |     |      |
| gaa | ata | cac | ctc | ggg | gtg | ctg | agt | att | ttc | tgg | ggg | atc | gcg | atg | atg | 7203 |
| Glu | Ile | His | Leu | Gly | Val | Leu | Ser | Ile | Phe | Trp | Gly | Ile | Ala | Met | Met |      |
|     | 300 |     |     |     |     |     | 305 |     |     |     |     | 310 |     |     |     |      |
| atc | atc | ggg | ctt | ggt | atg | cag | gtt | aaa | gtg | ctg | gcg | ctg | gca | cca | gat | 7251 |
| Ile | Ile | Gly | Leu | Gly | Met | Gln | Val | Lys | Val | Leu | Ala | Leu | Ala | Pro | Asp |      |
|     | 315 |     |     |     |     | 320 |     |     |     |     | 325 |     |     |     |     |      |
| gct | acc | gac | gtc | gcg | atg | gcg | cta | ttc | tcc | ggc | ata | ttt | aat | att | gga | 7299 |
| Ala | Thr | Asp | Val | Ala | Met | Ala | Leu | Phe | Ser | Gly | Ile | Phe | Asn | Ile | Gly |      |
| 330 |     |     |     |     | 335 |     |     |     |     | 340 |     |     |     |     | 345 |      |
| atc | ggg | gcg | ggt | gcg | ttg | gta | ggt | aat | cag | gtg | agt | ttg | cac | tgg | tca | 7347 |
| Ile | Gly | Ala | Gly | Ala | Leu | Val | Gly | Asn | Gln | Val | Ser | Leu | His | Trp | Ser |      |



| 350   | 355 | 360 |      |
|---|-----|-----|------|
| atg tcg atg att ggt tat gtg ggc gcg gtg cct gct ttt gcc gcg tta     |     |     | 7395 |
| Met Ser Met Ile Gly Tyr Val Gly Ala Val Pro Ala Phe Ala Ala Leu     |     |     |      |
| 365   | 370 | 375 |      |
| att tgg tca atc att ata ttt cgc cgc tgg cca gtg aca ctc gaa gaa     |     |     | 7443 |
| Ile Trp Ser Ile Ile Ile Phe Arg Arg Trp Pro Val Thr Leu Glu Glu     |     |     |      |
| 380   | 385 | 390 |      |
| cag acg caa tag ttgaaaggcc cattcgggcc ttttttaatg gtacgtttta         |     |     | 7495 |
| Gln Thr Gln   |     |     |      |
| 395   |     |     |      |
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| atgattttcca ggatgccgtt aataataaac tgcacaccca tacataaccag caggaatccc |     |     | 7555 |
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| ctgcgtaggc ttccccacaa aataaccgcc accaggaaaa agatcagcgg cggcgcaacc   |     |     | 7675 |
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Gln Val Gly Ile Met Leu Thr Ile Tyr Ala Trp Val Val Ala Leu Met  
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Phe Ala His Ala Ile Phe Trp Ser Ile Thr Ala Ser Leu Ala Ile Arg  
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Gly Gln Tyr Phe Gly Trp Arg Met Thr Phe Phe Ala Ile Gly Ile Gly  
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Gly Phe Ser Ala Asn Phe Ala Thr Ala Leu Leu Leu Leu Leu Gly Gly  
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Ala Gly Ile Ile Gly Ser Val Ile Phe Gly Lys Leu Gly Asn Gln Tyr  
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Ala Ser Ala Leu Val Ser Thr Ala Ile Ala Leu Leu Leu Val Cys Leu  
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Ala Leu Leu Leu Pro Ala Ala Asn Ser Glu Ile His Leu Gly Val Leu  
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Ser Ile Phe Trp Gly Ile Ala Met Met Ile Ile Gly Leu Gly Met Gln  
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Val Lys Val Leu Ala Leu Ala Pro Asp Ala Thr Asp Val Ala Met Ala  
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Gly Asn Gln Val Ser Leu His Trp Ser Met Ser Met Ile Gly Tyr Val  
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| Thr Ile Glu Leu Ile Cys Gly His Arg Ser Ile Arg His Phe Thr Asp |            |            |             |            |             |      |
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| Glu Pro Ile Ser Glu Ala Gln Arg Glu Ala Ile Ile Asn Ser Ala Arg |            |            |             |            |             |      |
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| Ala Thr Ser Ser Ser Ser Phe Leu Gln Cys Ser Ser Ile Ile Arg Ile |            |            |             |            |             |      |
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| acc gac aaa gcg tta cgt gaa gaa ctg gtg acg ctg acc gcc ggg caa |            |            |             |            |             | 3368 |
| Thr Asp Lys Ala Leu Arg Glu Glu Leu Val Thr Leu Thr Gly Gly Gln |            |            |             |            |             |      |
|   | 55         |            |             | 60         |             | 65   |
| aaa cac gta gcg caa gcg gcg gag ttc tgg gtg ttc tgt gcc gac ttt |            |            |             |            |             | 3416 |
| Lys His Val Ala Gln Ala Ala Glu Phe Trp Val Phe Cys Ala Asp Phe |            |            |             |            |             |      |
|   | 70         |            |             | 75         |             | 80   |
| aac cgc cat tta cag atc tgt ccg gat gct cag ctg gcc ctg gcg gaa |            |            |             |            |             | 3464 |
| Asn Arg His Leu Gln Ile Cys Pro Asp Ala Gln Leu Gly Leu Ala Glu |            |            |             |            |             |      |
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| caa ctg ttg ctc ggt gtc gtt gat acg gca atg atg gcg cag aat gca |            |            |             |            |             | 3512 |
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ccg gat ctt aag ccg cgt tta ccg gcc tcc att ttg gtg cat gaa aac 3704  
 Pro Asp Leu Lys Pro Arg Leu Pro Ala Ser Ile Leu Val His Glu Asn  
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